FLIGHT
The AIRCRAFT ENGINEER & AIRSHIPS

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 771. (No. 40, Vol. XV.) OCTOBER 4, 1923 [Weekly, Price 6d. Post free, 7d.

Flight

The Aircraft Engineer and Airships

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C. 2

Telegrams: Truditur, Westcent, London. Telephone: Gerrard 1828

Annual Subscription Rates, Post Free:

United Kingdom .. 30s. 4d. Abroad .. .. 33s. 0d.*

These rates are subject to any alteration found necessary under abnormal conditions and to increases in postage rates

* *European subscriptions must be remitted in British currency*

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Oct. 12 .... **"Some Aspects of an Attempt to Fly Round the World," by Maj. W. T. Blake, before I.Ae.E.**
Oct. 14 .... **Beaumont Cup Race at Istres, France**
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EDITORIAL COMMENT.

The Schneider Cup

PROBABLY to most of those intimately connected with aviation the result of the Schneider Cup International Seaplane Race at Cowes did not come as any great surprise. It was known that the American machines were certainly very fast. Exactly how fast was not realised, and the actual speed at which the race was won was, we think, rather surprising, representing a jump of from 143 m.p.h. by Biard at Naples last year to 177.38 m.p.h. by Rittenhouse at Cowes this year, an increase of 34.38 m.p.h. We personally, and we think most other people, had not expected quite such high speeds. It is useless pretending that we had, as the graph published on p. 572 of last week's issue of FLIGHT only extended to 170 m.p.h., which before the race we regarded as the probable limit of the speeds that would be made. That the race should have been won at over 177 m.p.h. is a matter for congratulation, and there is no question that the Americans thoroughly deserved their win.

The preparations that had gone before the race, the organisation of the American team, and the fine piloting in the actual race itself were such as to ensure, as far as is humanly possible, success. A fact which further increased the chances of the American competitors was the sudden change in weather conditions, which were almost perfect from the American point of view. We frankly admit that we had hoped for a certain amount of wind and sea for Thursday, September 27, as we know the seaworthiness of the Supermarine boat, while the behaviour in a seaway of seaplanes fitted with long floats is somewhat doubtful. In fact, the Americans themselves admitted, we believe, that had the sea been rough on the day of the navigability and watertightness tests the Curtiss-Navy racers might easily have behaved less well than they actually did.

We are not using this fact as an excuse for Britain losing the race, nor do we intend it to reduce in the slightest degree the merit of the American machines, engines and pilots, which and who were, as a matter

of fact, excellent. We merely mention it as a contributory cause which was not without its importance.

We congratulate America on her win, and above all we congratulate the American aircraft industry on being fortunate enough to have a Government which realises the importance to aeronautical development of State support for participation in International aviation events. On this side of the Atlantic we are less fortunate. The Air Ministry is fully alive to the importance of support for firms taking part in international races, but up to the present it has not been possible to convince the Treasury that direct Government support is necessary or even advisable. It is to be hoped that in the future those who hold the purse strings may be persuaded to see that if Britain is to hold her place in international aviation it will be necessary to assist by every means possible such of the British construction firms as have shown themselves capable of producing machines that are really worthy of representing us in international flying events.

The only British representative in the actual race—the Supermarine "Sea Lion III"—is a very fine machine, and, as pointed out in our notes on the race, is of direct value to naval flying even as she stands, as her splendid climb at the finish of the race showed. Fitted with slightly larger wings the machine should be of even greater practical use. But it is idle to pretend that the "Sea Lion III" represents the last word in high-speed flying boat design. The Supermarine Aviation Works have struggled along with very scant Government encouragement for many years now, and the finances of the firm did not allow of building a machine to the very latest ideas. To do so would introduce a certain amount of experimental work, for which there was neither the time nor the funds available. Consequently last year's model was improved upon as far as it could be without entire re-designing, and the race showed that this was far from being sufficient.

We are quite certain that had Government encouragement been forthcoming the Supermarine Works could and would have produced a machine worthy to challenge the fastest seaplanes in the world, and the same applies to several of our other firms. The pity of it is that it would not have cost the country a very great deal of money to have produced machines that would have kept the Schneider Trophy in this country for another year, whereas if the Cup is to be brought back from the United States the costs entailed are enormously increased. We are quite sure that ultimately the Government will be forced by public opinion to recognise in a practical manner the importance of British participation in International events, and thus we are not entirely without hopes that the coveted Schneider Trophy may be brought back to these shores, but the task will be a difficult one, and a very expensive one.

From the technical point of view the Schneider Cup race has been of value in bringing to the front certain features which, although vaguely realised, have scarcely received the recognition which they seem to merit. For instance, although we have no data relating to the increase in speed which the fitting of wing surface radiators brought about, it must have been very considerable, and the gruelling test of the Schneider race must be regarded as having demonstrated that this type of radiator is capable of standing up to its work under very trying conditions. Whether or not the type is applicable to commercial aeroplanes of relatively low speed is, perhaps, open to doubt, but it would appear that for fighting machines a good case can be made out for it. It is true that it presents a large vulnerable area, but, on the other hand, the extra speed and manœuvrability help to make up for this, while it should be possible so to subdivide the radiator into separate sections, each capable of being segregated, that in case of a puncture only the water in that section would be lost, so that the wing surface type should be little the worse off in this respect than the types now commonly used.

Another feature of the Curtiss-Navy racers which undoubtedly contributed considerably to their success is the Duralumin propellers. We believe that tests have shown them to be more efficient than the thicker wooden airscrews, and as they are run at very high speeds on the Curtiss-Navy racers (we believe their tip speed is somewhere in the neighbourhood of the speed of sound) the doubts that existed on this point appear to be unfounded. As regards general design, the American machines were streamlined with the utmost care, and it does not appear possible to go much farther in this direction, unless one contemplates as a possible development the fitting of retractable floats. Designs have been got out in which a single central float is so mounted that when the machine is in the air the float can be raised to lie snugly against the bottom of the fuselage. If such a central float can be shown to be sufficient for getting off, taxying, etc., this development may become a practical proposition.

* * *

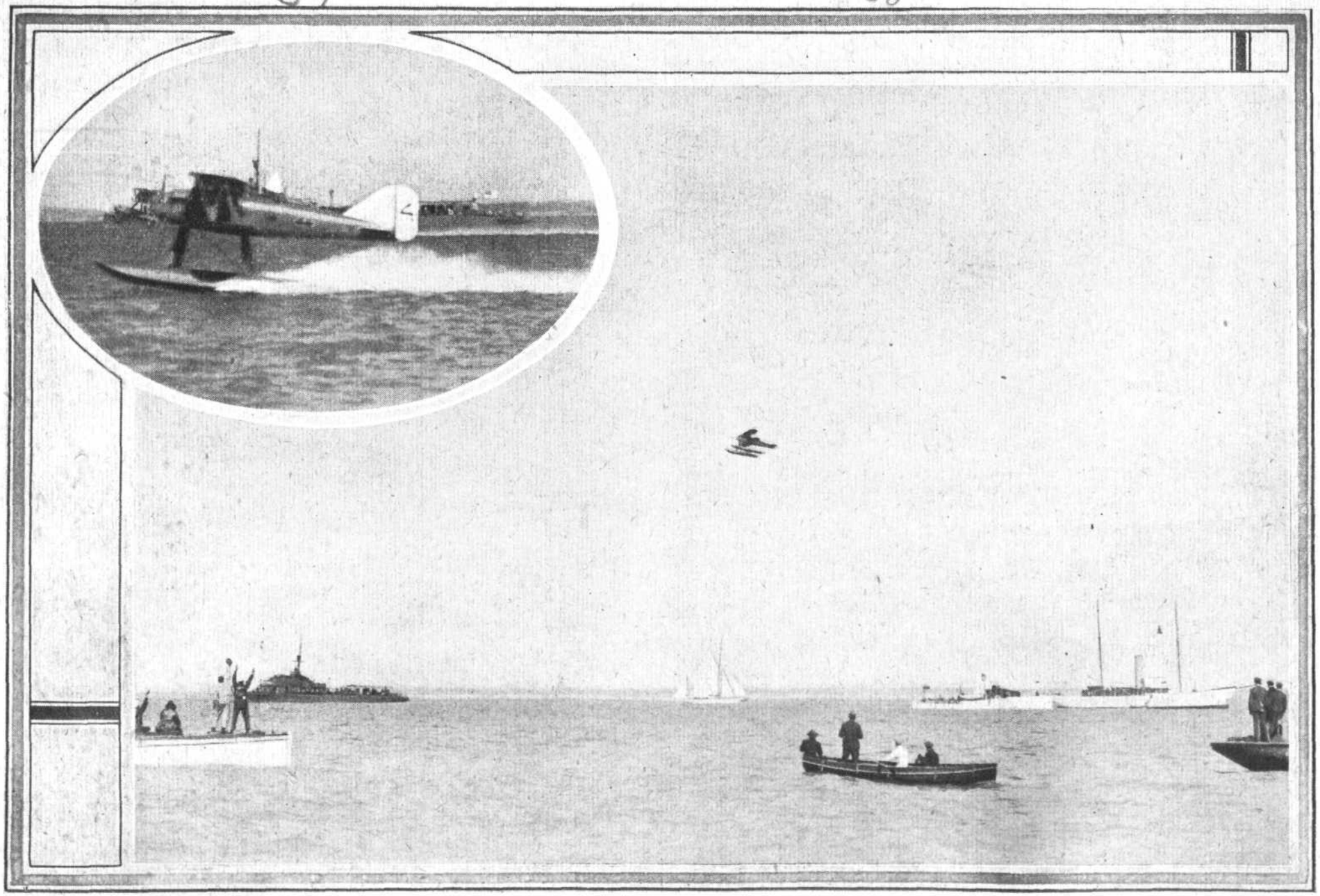
The Light 'Plane Competitions

On Monday of next week, October 8, the competitions for light 'planes will begin at Lympne aerodrome, Kent. Elsewhere in this issue of FLIGHT will be found a list of the machines and pilots entered, and also a few explanatory remarks relating to the manner in which it is intended to run the competitions. We pointed out, when these competitions were first announced, that a greater variety in the performances aimed at would be likely to result in producing types more generally useful, and although the rules have not been extended to cover nearly as wide a field as we could have wished, the machines entered show that we can practically count on the absence of freaks. Thus the competitions should do good, and a most interesting week at Lympne may be looked forward to.

* * *

Safety in Flying

In our correspondence column this week we publish a letter from Capt. Geoffrey de Havilland on the importance of the air speed indicator. The case for greater attention to this valuable instrument has been so well put by Capt. de Havilland that there is no need for us to elaborate it. The golden rule emphasised by the distinguished designer—*Do not lose flying speed whatever happens*—is one which should be the first and last in the minds of pilots, but it is to be feared that it is not invariably so. The suggestion made by Capt. de Havilland that the pupil should fly on alternate days with the A.S.I. covered up is, we think, an excellent one, and should train the pupil in flying by "feel" as well as by instruments. The subject is one of vital importance, and we would welcome contributions to a thorough ventilation of the problem.



WINNING THE SCHNEIDER TROPHY : This photograph shows the scene at the finish, with Lieut. David Rittenhouse, on the Navy-Curtiss racer, crossing the line after having covered the course at an average speed of 177.38 m.p.h. Mr. Withers' steam yacht, with a black cone hoisted, was one of the mark boats, and is seen on the right. On the left is a representative of the British Navy, a " P " boat, while in front is an American launch with the crew cheering the winner. The inset shows Rittenhouse starting in the race, and just by the nose of his machine may be seen the front portion and floats of the other American competitor, No. 3, who got off a second or so before No. 4.

THE SCHNEIDER CUP INTERNATIONAL SEAPLANE RACE

America Scores a Well-Deserved Win

LIEUT. RITTENHOUSE, of the United States Navy, has won the Schneider Cup Seaplane Race on a Curtiss-Navy twin-float seaplane, with 465 h.p. Curtiss D-12 engine, at the astonishing average speed of 177·38 m.p.h. (land miles). His fastest lap—the last—was covered at a speed of 181·17 m.p.h. The performance is one of which America may be justly proud, and, let it be said at once, America well deserved the win which she scored. The American machines were extraordinarily fine pieces of design and construction, the organisation was excellent, and the pilots handled their mounts with consummate skill. Add to this the fact that the weather favoured the American representatives, and it will be seen that the conditions generally favoured the American team. This is not to say that the American representatives were entirely free from trouble. As a matter of fact they were not, having lost one of their racing machines in a test flight a few days before the race, while the spare machine suffered from engine trouble and was unable to start in the race. But even so the two machines which did compete in the race were so much faster than any of the other entrants that there was never any doubt, after the first lap, as to who would win apart from accidents.

B2 B7

The Schneider Cup Race Winners: On the right, Lieut. Rittenhouse being congratulated by his friend and compatriot Lieut. Irvine, who was second. The insets show the two Curtiss-Navy machines used. Irvine's cornering was, if anything, better than Rittenhouse's, but No. 3 was the slower machine.

A6

Thursday at Cowes

The morning of Thursday, September 27, was fine, with practically no wind and a calm sea. Everything was favourable for the navigability and seaworthiness tests—in fact too favourable from the British point of view, as it was generally thought that if the day of the tests was windy, with a fair amount of sea running, the British Supermarine "Sea Lion III" would be at an advantage as compared with the American twin-float seaplanes and, to a smaller extent, with the French boats. However, the conditions were extremely

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Lieut. Irvine (in shirt sleeves in middle of boat) going ashore after securing second place in Schneider Cup.

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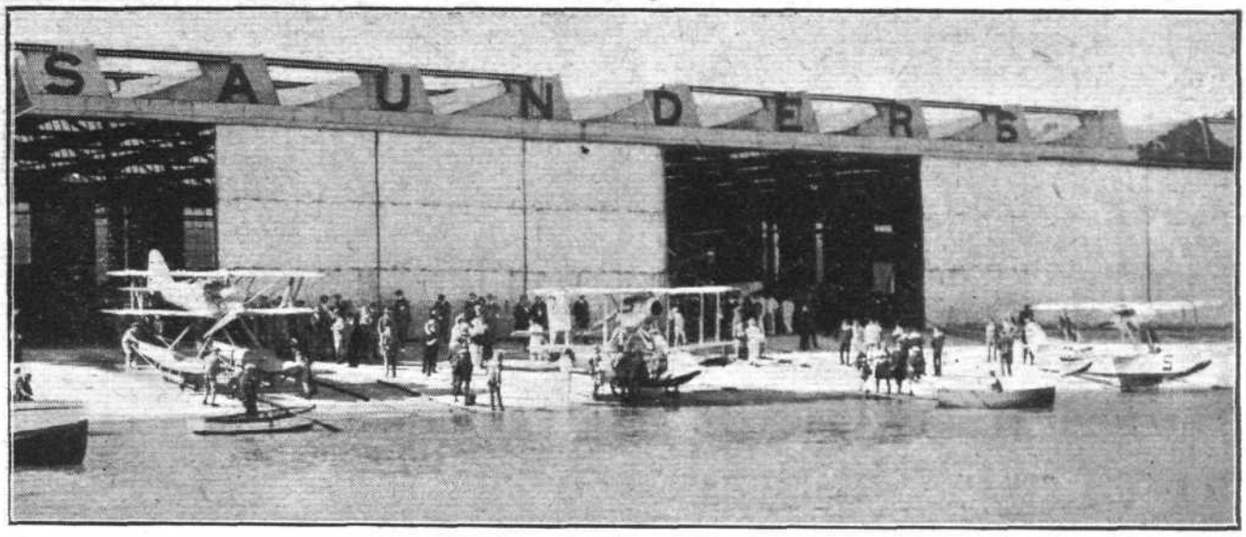

THREE OF THE COMPETITORS ON SAUNDERS' SLIPWAY ON THE MORNING OF THE RACE: On the left, the Curtiss-Navy No. 3. In the centre, the Supermarine, and on the right, the C.A.M.S. 38.

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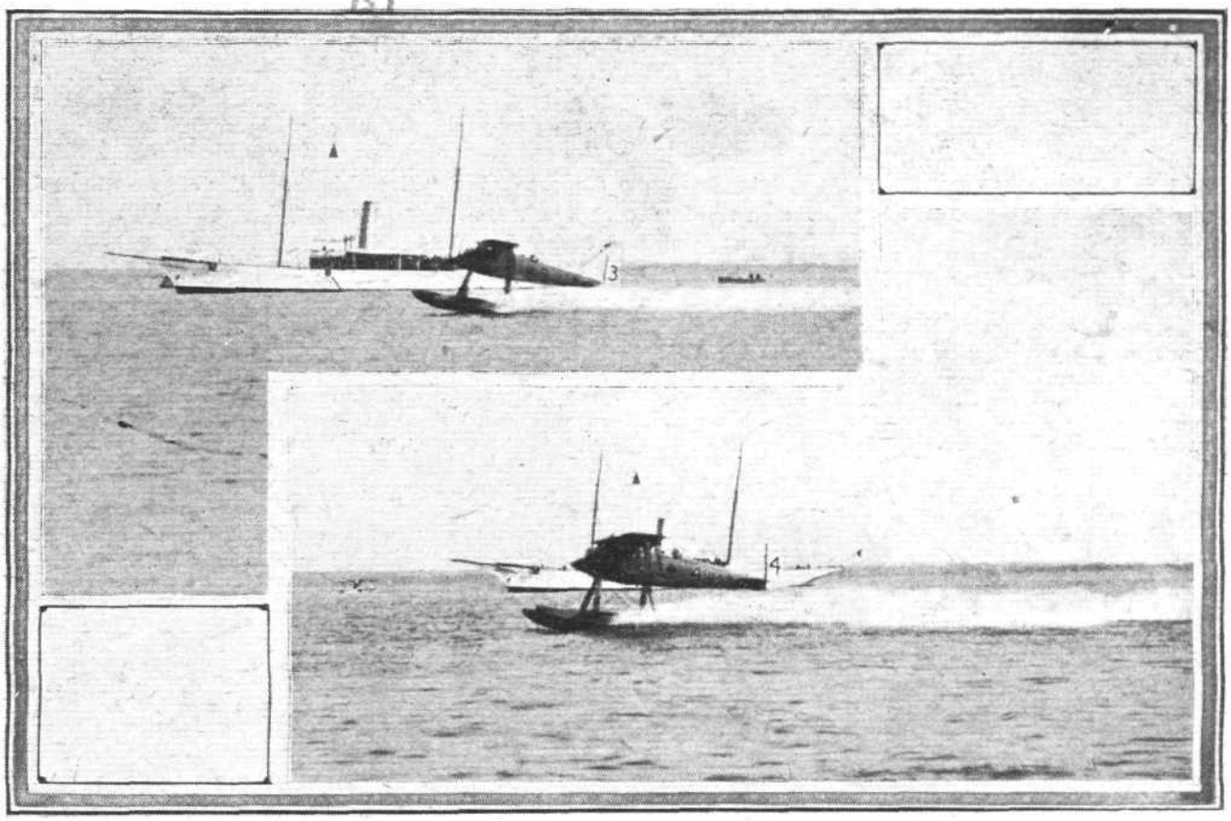

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THE NAVIGABILITY TESTS: The two American representatives taxi-ing across the line.

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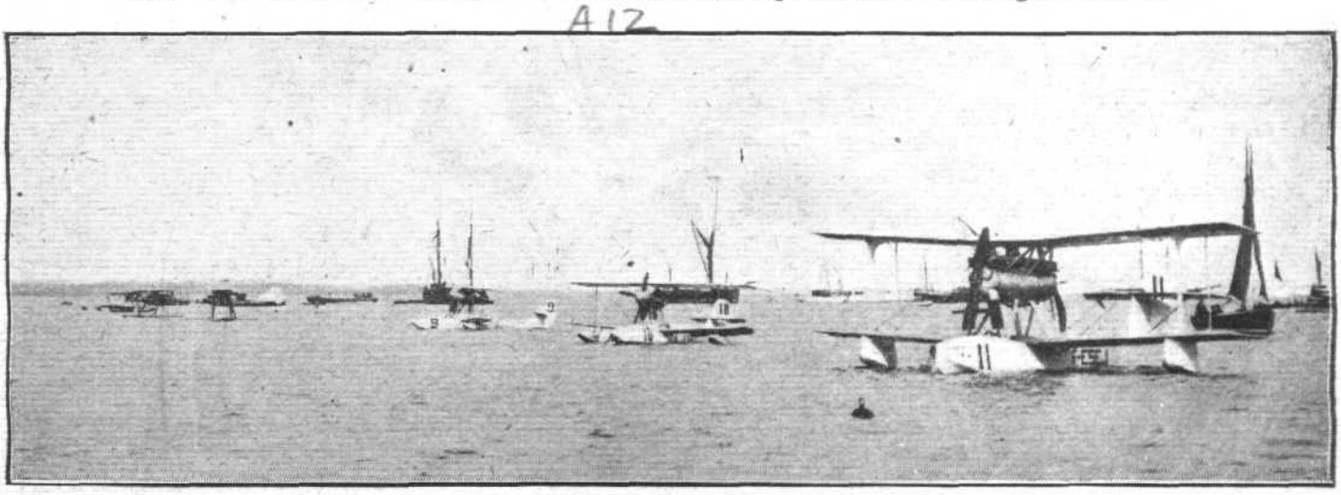

THE MOORING TEST: The six machines in line are, left to right, the Supermarine "SeaLion III," the two American Navy-Curtiss seaplanes, the C.A.M.S. flying boats, and the Latham twin-engined flying boat.

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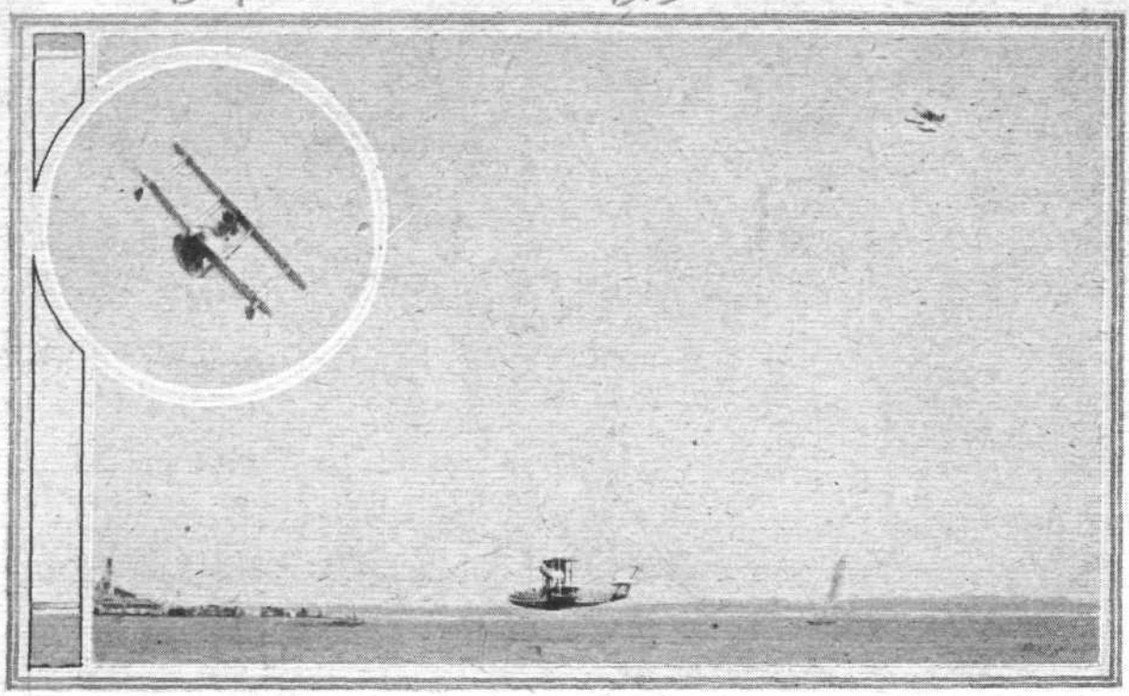

THE SCHNEIDER CUP RACE: Capt. Biard, on the Supermarine "Sea Lion III," gets away, just as the American Navy-Curtiss No. 4 (Rittenhouse) rounds the mark boats after finishing his first lap. Inset shows Capt. Biard turning.

favourable, and it was decided to make a start rather earlier than had originally been anticipated.

The competitors were informed that they were free to go for their tests as soon as they were ready, and the first out was the Supermarine "Sea Lion III." The taxying and getting off tests were passed by Biard in fine style, and in a very short time the Supermarine boat was secured to her buoy, beginning her six-hours mooring test.

The C.A.M.S. machines were the next to commence their navigability tests. Both were well handled, and their taxying at fairly high speed was, perhaps, the best of the day. These machines, which have a hollow step, appear to push the water up in front of them, and even at fairly low speeds the water can be seen washing right across the deck in the bows, but practically no water is thrown up sideways and aft. One would like to see how they behave in a bit of a lop, as it seems likely that they would tend to bore by the head. However, on the day of the tests the sea was calm, and there was nothing to worry the machines, which went through their various evolutions with obvious ease. They certainly appeared to be very fast, especially No. 9, the C.A.M.S. 38, piloted by Hurel. No. 10, the C.A.M.S. 36 *bis*, seemed a little slower. This machine was piloted by Pelletier d'Oisy.

The two American representatives, the Curtiss-Navy racers carrying the numbers 3 and 4 and piloted by Lieut. Irvine and Lieut. Rittenhouse respectively, commenced their tests as the C.A.M.S. were finishing, and they also behaved excellently both on the sea and in the air. It seemed quite

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Captain Biard, the pilot, on board the Supermarine "Sea Lion III."

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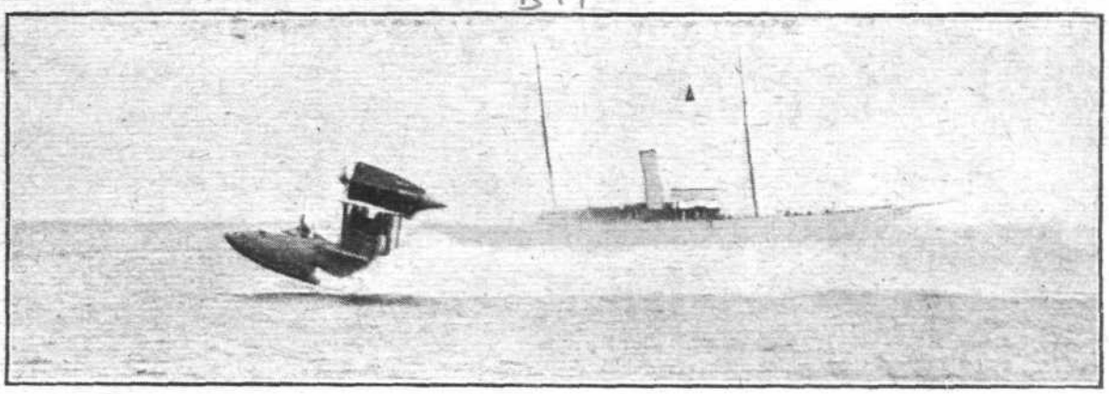

The Schneider Cup: The Blackburn "Pellet" taxi-ing. This photograph was taken a few seconds before the crash.

obvious that they were considerably faster than the French machines, but as probably none of the machines were being flown all-out the apparent difference in speed could not be counted upon as a reliable guide. The Navy-Curtiss machines seemed quite happy on the smooth sea, and it was noticed that they taxied very fast with their noses well in the air, yet without any apparent tendency to "porpoising." Both machines were brought up the Medina to be secured to their buoys, but No. 3, piloted by Lieut. Irvine, was recalled, as he had misunderstood his instructions and was required to carry out part of the tests a second time to be in order. This he did, and this time he satisfied the judges that his tests were properly carried out. He was then allowed to go to his buoy.

In the meantime the scene at "off" and above Cowes was one to gladden the eye. The sun was shining, the sea was calm, and hum of aero engines was in the air. An F-boat was cruising about overhead, while in the distance over Gosport way several dark specks could be seen through the slight haze, floating about at a good altitude. A Supermarine "Seagull" amphibian circled overhead, while farther out a twin-float seaplane, recognisable as a Fairey III D, floated around majestically. A yellow machine with rotary engine was made out to be a Parnall "Panther," and in spite of his rotary engine the pilot appeared to be enjoying himself at quite a low altitude. Presumably he counted on his hydroplane undercarriage and flotation bags to see him through in case of trouble.

Shortly after the American No. 3 went out for the second time the Latham twin-engined flying boat, No. 11, came out and proceeded to carry out its tests. This it did in good style, appearing to handle very well. Like the Supermarine, the Latham is more of a seaworthy machine, and was probably chosen for that reason, in case of a rough day, as it was probably not as fast as the much smaller C.A.M.S. racers. It was noticed that after completing his tests Duhamel, the pilot of the Latham, taxied all the way up the Medina under own power, the machine not being towed in as the others had been, but going right up to his buoy, where he was made fast.

When the Navy-Curtiss No. 3 and Latham No. 11 had been secured to their buoys there was nothing more to be done, and most of the visitors made their way up to the Saunders sheds, where mechanics were working feverishly on the Blackburn "Pellet" to get her ready for the navigability tests. The machine had been towed across from Fairey's sheds at Hamble, and various adjustments were required while the fin chines were being reinforced with Saunders "Consuta."

A crowd of interested onlookers gathered in the sheds, very generously placed at the disposal of competitors by Mr. S. E. Saunders, and followed the work as it proceeded. Mr. Newman, works manager to Mr. Saunders, was here, there and everywhere, giving assistance and advice. He and his men had been placed at the disposal of any competitor who might be in need of skilled help, and it was willingly and efficiently given. The very sporting spirit of Mr. Saunders and his staff was commented upon at the time of the Schneider Cup Race of 1919, when one of the French machines was practically rebuilt in the Saunders' sheds after a crash. The damage to the Navy-Wright this year was too extensive to be carried out in a few days, otherwise one does not doubt that Mr. Saunders and his staff would have had the machine repaired. A spirit such as that always shown by Mr. Saunders on these occasions deserves recognition, and it is therefore all the more gratifying to learn that fresh developments may be expected at Cowes in the near future, when a good deal should be heard of the

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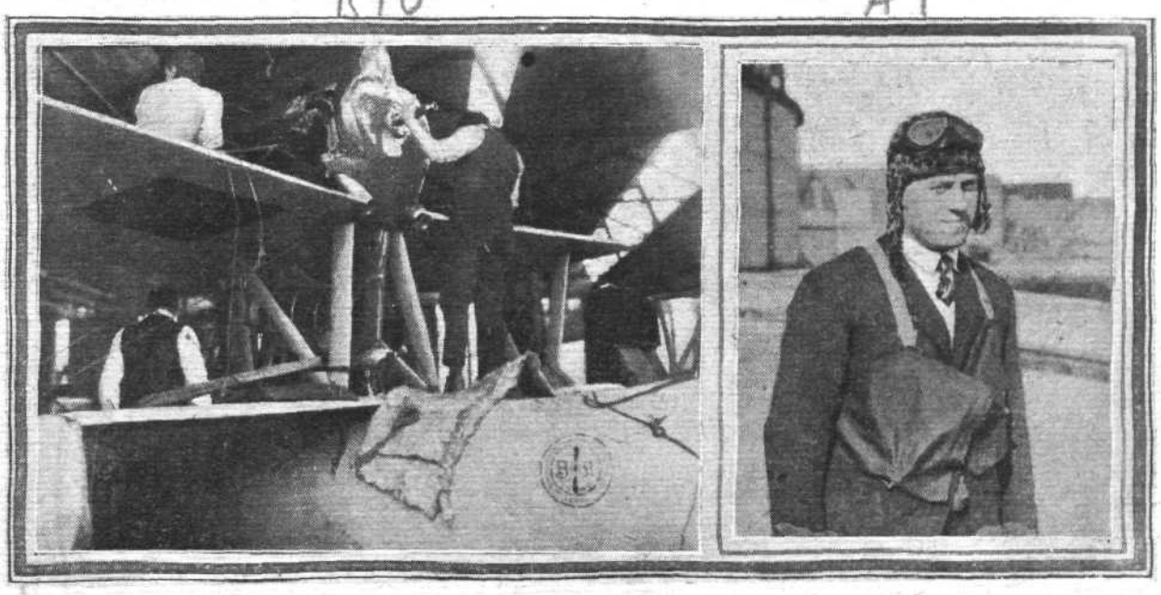
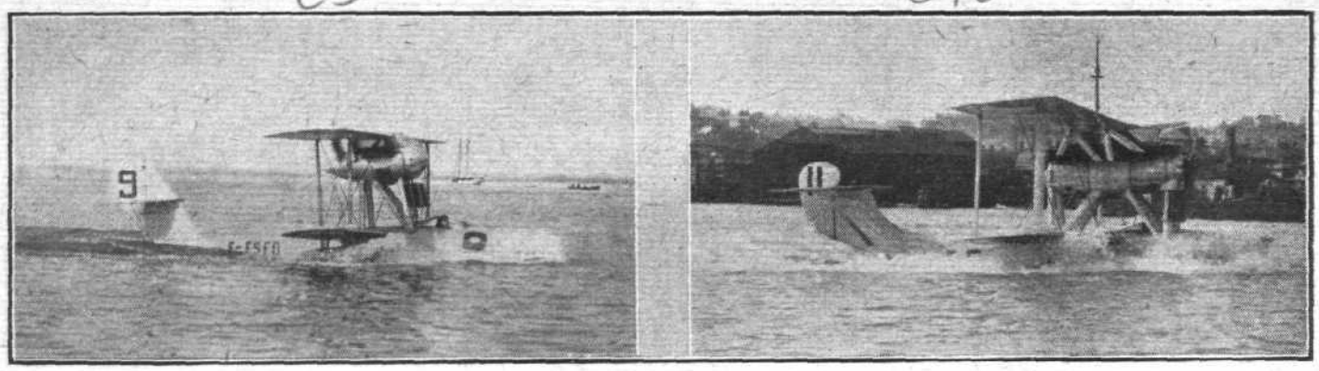


THE BLACKBURN "PELLET" having a Lamblin radiator fitted and, on the right, Mr. Kenworthy photographed shortly before he started on the tests which ended in a crash.

C3 C10



A STUDY IN WAVE-MAKING : On the left, the C.A.M.S. pusher, piloted by Hurel, and, on the right, the Latham type 1, twin-engined flying boat.

Saunders' works in connection with aviation. That, however, is another story, and will have to be told another time.

During the wait for the " Pellet " to be finished, the Medina and Cowes Roads afforded a good subject for study and interest. It seemed that half of the aviation fraternity had taken to yachting. Yachting dress—orthodox or otherwise—was the fashion of the day, and several yachts belonging to aviation people whom one had not previously suspected of aquatic propensities were discovered in the anchorage. First and foremost there was Mr. Withers' magnificent steam yacht. Mr. Withers, who is over 80 years of age, is still as interested in flying as ever. In the old days, it will be remembered, no Hendon meeting was considered quite complete without Mr. Withers in his Rolls-Royce following the racing from the paddock. His interest in aviation is still as keen as ever, and on the occasion of the Schneider Cup Race Mr. Withers followed the proceedings from the excellent vantage point afforded by his yacht, which was one of the two mark boats at Cowes. Incidentally Mr. Withers proved a very charming host to a considerable number of visitors to the race, who will not quickly forget the days spent at Cowes in September of 1923.

Colonel Darby was another flying representative discovered to be the possessor of a yacht, and for the time being might be considered to have changed from an " aerial Darby," a title wholly disrespectfully but affectionately applied to him for his interest in aviation, to an aquatic Darby. As Clerk of the Course, Colonel Darby no doubt found the possession of a yacht, anchored close by the course, a great convenience. Colonel Alec Ogilvie has long been suspected of having a liking for the sea, and as he was repeatedly seen in a small motor dinghy churning up the water between the pier and the many yachts anchored in Cowes Roads, it is considered proved that he had a vessel tucked away somewhere on that picturesque bit of seascape.

One vessel which attracted perhaps more attention than any other, with the possible exception of the U.S.N. *Pittsburg*, was a motor-assisted launch carrying a rig with which one is quite unfamiliar, consisting of two mainsails placed the wrong way up and bearing strange symbols for the benefit of those not able to read the wording " Shell " on the yellow fabric. The new rig could not have been very efficient, as the motor had to be kept going all the time, assisted occasionally by a form of jet propulsion in which sounds vaguely resembling music and sometimes inhuman speech, emanating from a large trumpet on deck, were used to assist the progress of the vessel. The noise issuing from this trumpet when translated was said to have stated, with considerable emphasis, that Sir John Alcock crossed the Atlantic on a shell. Personally we were under the impression that he and Sir Arthur W. Brown crossed the Atlantic on a Vickers " Vimy."

At about half-past eleven the Blackburn " Pellet " was finished, and the officials were notified that Kenworthy would attempt to pass the navigability and watertightness tests. The machine was launched from Saunders' slipways, and, the engine started, taxied down the Medina to the starting line. Getting into position, Kenworthy opened out his " Lion " engine and commenced taxying. The bows rose at a consider-

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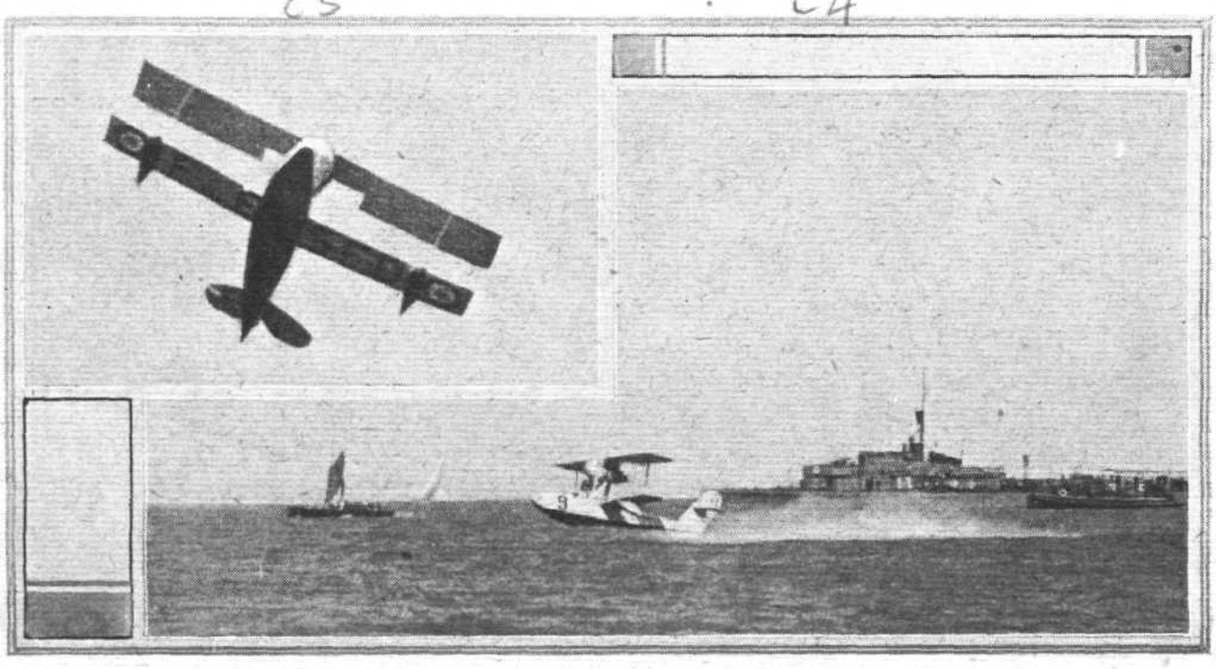

THE SCHNEIDER CUP RACE : Hurel, on the C.A.M.S. 38 (No. 9), gets away well. In the inset is shown one of his turns around the mark boats. He only completed one lap of the course.

able angle, and the machine began to lift, sinking back again and rising again. The movement was evidently a form of "porpoising," although the machine did not give the appearance of pitching to any considerable extent, but rather rose and sank bodily without much pitching, hitting the sea with a series of resounding smacks. In a few seconds the "Pellet" was seen to begin to turn to starboard slowly. The starboard wing tip float touched, and the machine turned over on its nose and sank. For what seemed a very long time there was no sign of the pilot, and fears were entertained that he had not been able to extricate himself. Suddenly, however, he appeared, bobbing up like a cork, and climbing on top of the wreck was picked up by one of the many motor launches which sped to his assistance as soon as the crash occurred. He promptly fainted on getting safely on to the wreckage, but was soon revived and brought back to his hotel, nursed by Mrs. Kenworthy, who was in the motor launch *Vivid* which was among those standing by. He had had quite a marvellous escape, and seemed none the worse for his experience. It was stated that someone actually timed Kenworthy, who was said to have been under water for 61 seconds. He later related how, when the machine turned turtle, he found himself inside the cockpit with his head on the floor and his feet pointing towards the cockpit opening, which he could dimly see. Holding his nose with one hand he wriggled free and shot to the surface.

With the Blackburn "Pellet" crashed (she was brought ashore during the night, by the way, and brought back to the Saunders' sheds by ubiquitous Mr. Newman) Britain was reduced to one representative, the Supermarine "Sea Lion III," and the chances of retaining the Schneider Trophy were not considered over bright, although many things might happen to improve the situation. Towards evening the majority of the machines were brought up to the sheds, having finished their six hours at a buoy, but the two Americans decided to stay at their buoys until the next tide, while the Latham was brought as far in as the mud would allow, and left there until there was sufficient water to float her to the slipways.

The Race

On the morning of the Schneider Race itself, Friday, September 28, the weather was exceptionally fine, with bright sunshine and a calm sea. The early morning showed signs of wind, and during the forenoon the wind freshened somewhat, although at no time up to and during the race did the sea get up to such an extent as to inconvenience to the slightest degree any of the competitors.

It had been decided that the American machines should start first, followed 15 minutes later by the Supermarine, and the French to go 15 minutes after the British boat. Promptly at 11 a.m. the signal was given, and the two Navy-Curtiss racers, Nos. 3 and 4, taxied across the starting line, No. 3 (Irvine) slightly ahead of No. 4 (Rittenhouse). No. 3 made a right-hand turn and No. 4 a left-hand turn, according to instructions, so that the machines should not get in one another's way. Flying at a terrific speed the two machines were soon lost to sight in the direction of Selsey Bill, the first turning point.

On the Victoria Pier a number of spectators had gathered, timekeepers and other officials occupying the corner nearest to the inner mark boat, and press representatives a small enclosure immediately behind the official one. Brigadier-General F. L. Festing, C.B., C.M.G., had agreed to act as Press Steward, and, needless to say, he fulfilled his task with efficiency and courtesy. The Press duly appreciated the honour shown its representatives by appointing such a distinguished Press Steward, and at the finish of the proceedings the General was thanked for his very charming stewardship, and the hope expressed that he would frequently accept similar duties in the future.

Lining the promenade were thousands of spectators, who from this point of vantage obtained nearly as good a view as did those more favoured who saw the race from the pier or from yachts. Several large yachts and launches dotted the anchorage, among which was noticed a Royal Air Force launch. The British Navy, which had been unrepresented on the day before, suddenly disclosed itself in the form of a "P" boat, while America was, of course, represented by the U.S.A. *Pittsburg*, and the French Navy by the *Verdun* and the C.57.

However, to return to the race. Biard, on the Supermarine "Sea Lion III," had taxied out, and was waiting for the starting signal a few minutes before 11.15. To the surprise of everyone a small dark speck appeared in the direction of Southsea, the second turning point. From the speed with which this speck approached there could be no doubt that it was one of the American machines. And yet this seemed impossible, as it would seem to mean that the American machine must cover the course in 15 minutes, which would give a speed of considerably over 170 m.p.h. As it approached, however, the number 4 on the rudder could be distinguished, and Rittenhouse swung around the mark boat just as Biard crossed the starting line on the "Sea Lion III." Biard naturally had to climb and make a 180° turn (as he was starting from east to west), and so the Curtiss-Navy was well away on its second lap by the time the British boat was headed for Selsey. After a few minutes it was announced that Biard had been disqualified, as he was stated to have crossed the line in flight instead of taxying. After a consultation between the officials, however, it was decided that, although the Supermarine had been off the sea, it had dropped again, and was actually in contact with the water at the time of crossing the line. In the meantime Biard, all unsuspecting that there was any query about his start, was speeding over the course.

No. 3, the Curtiss-Navy piloted by Irvine, passed the mark boats about 20 seconds behind Rittenhouse, and commenced his second lap, some distance ahead of Biard. The French team was due to start at 11.30, and the C.A.M.S. and Latham were seen taxying to the east, getting into position for their start. While they were cruising about the first of the Americans, No. 4, rounded the mark boats on the completion of his second lap, which had taken but 14 mins 22.5 secs. He was followed some 20 secs. later by No. 3, who had taken 14 mins. 43 secs.

Then the starting signal for the three French machines was given, but only No. 9, the C.A.M.S. 38 piloted by Hurel, crossed the starting line. The other two machines were in trouble, one having fouled a buoy and the other suffering from engine trouble. Thus France was on a level footing with Britain as regards the number of representatives. Shortly after the start of No. 9 Biard came thundering along and rounded the mark boats in fine style, his turn giving an impression of perfect mastery. He was, however, found to have taken 17 mins. $11\frac{1}{5}$ secs. for his first lap, and was thus, unless he had something up his sleeve, very much slower than the Americans.

The C.A.M.S. 38 rounded the mark boats after an interval of 19 mins. $42\frac{3}{5}$ secs., and was thus evidently much slower than the Supermarine, and hopelessly outclassed in comparison with the American machines. As it turned out, the C.A.M.S. never returned again to the starting point, having been forced to come down in the vicinity of Selsey Bill owing to engine trouble. This left only three machines in the race, the two Curtiss-Navy racers and the "Sea Lion III." The British boat was found to be improving its speed with each lap, but so were the Americans, and it soon became evident that, except for unforeseen accidents to both the Americans, the British defender could not possibly win.

The times taken for each of the five laps were as follows: No. 4: $15.06\frac{3}{5}$, $14.22\frac{1}{5}$, $14.24\frac{4}{5}$, $14.22\frac{1}{5}$, $14.11\frac{1}{5}$. No. 3: $15.27\frac{3}{5}$, 14.43, 14.42, 14.43, $14.29\frac{3}{5}$. No. 7 (the Supermarine): $17.11\frac{1}{5}$, $16.13\frac{4}{5}$, $16.12\frac{1}{5}$, $16.9\frac{4}{5}$, 15.59.

It is curious to note that both No. 3 and No. 4 covered their second and fourth laps in exactly the same time. The last lap of the winner was covered at a speed of 181·17 m.p.h., while Biard's fastest lap (the last) was covered at a speed of 161 m.p.h. The total time taken to cover the five laps of the course (214·3 land miles) was 1 h. 12 m. $26\frac{4}{5}$ s. by No. 4 (Rittenhouse); 1 h. 14 m. $5\frac{1}{5}$ s. by No. 3 (Irvine); and 1 h. 21 m. 46 s. by No. 7 (Biard). The average speeds worked out as follows: Rittenhouse, 177·38 m.p.h.; Irvine, 173·46 m.p.h.; and Biard, 151·16 m.p.h. It will be noticed that the speeds gradually increased with each lap, the competitors gradually opening their throttles fully as they became convinced the engines would stand the pace.

At this point we must lodge a strong protest—our only complaint in connection with the whole race. Only one of the machines competing in the race had the decency to keep within the limits of the graph published in FLIGHT last week for the (it had been hoped) easy determination of the speeds being made, from a timing of the competitors over one lap of the course. Capt. Biard on his Supermarine stayed well within the limits, but the others were right outside the graph, which had as its upper speed limit 170 m.p.h. and as its lower 150 m.p.h. The Americans, except for Irvine's first lap, went outside the graph at one end, and the C.A.M.S. went right off the map at the opposite corner. Next time we shall extend the graph to cover a range of from 30 m.p.h. to 300 m.p.h., then perhaps we shall gather them all in. Our Technical Editor, who was rather pleased with himself over his graph, was in a duly chastened frame of mind when he discovered how fast the Americans were travelling.

As the writer of these notes took the 1.30 boat from Cowes

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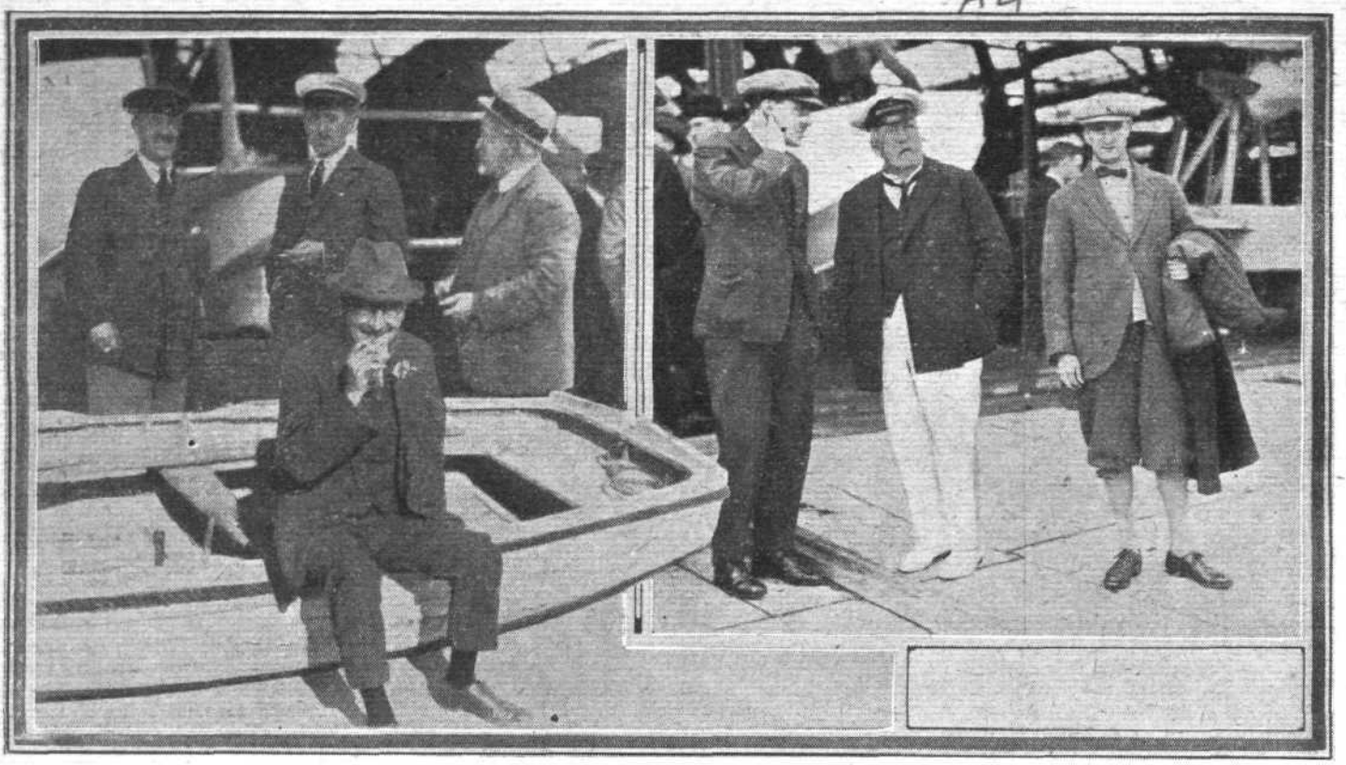

PERSONALITIES AT COWES : On the left is seen, sitting on the gunwale of a dinghy, the D. of R., General Bagnall-Wild, while behind are Major Seawright, Colonel Darby, and Mr. Saunders. The group on the right includes Capt. Goodman-Crouch, Mr. Withers, and Mr. Robert Blackburn.

to Southampton, having work to do in town over the week-end, he will leave it to a more able pen to describe another race, a competition for first place in hospitality, which is stated to have taken place during the afternoon and evening of September 28. The sea, as the evening wore on, is believed to have got up considerably, and several competitors are believed to have had difficulty in passing their navigability tests.

SCHNEIDER RACE CELEBRATIONS

FOLLOWING the finish of the race, a lunch at the Royal London Yacht Club, at the invitation of Mr. S. E. Saunders, took place to welcome the pilots, competitors and visitors for the event. In proposing the health of their host, General Sir Sefton Brancker referred to the splendid help to the Royal Aero Club given by Mr. Saunders in the organisation of the race.

Mr. Saunders said he had spent fifty years of his working life in building boats, and he thought that as a pioneer he was generally about fifty years before his time—a very big handicap to work against. It was, he considered, failure which led to success, and he thought that day's lesson was a great one. By way of emphasis, he mentioned that his work for motor boats had in twenty years brought their speed up from 17 to 65 knots—and that was about the limit on the water. That had helped considerably to design for the air. He was the first to build a flying boat in this country, and he now

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FRENCH REPRESENTATIVES AT THE SCHNEIDER CUP : The group on the left shows M. Pelletier d'Oisy, M. Hurel, M. Conflenti, and M. Santoni, pilots, designer, and constructor respectively of the C.A.M.S. machines, On the right is M. Latham, designer and constructor of the Latham twin-engined L.1, while in the centre is a portrait of M. Duhamel, the Latham pilot, who made an extraordinarily fine flight from France to Cowes on the Tuesday before the race, in very boisterous weather.

proposed to build flying boats with a most serious purpose, and he saw no limit to size in reason. He proposed to eliminate all metal and wires, and give the world an all-wood plane.

Sir Warden Chilcock, M.P., in proposing a vote of thanks to Commander Perrin for the wonderful organisation of the race, said it was disappointing that no public department deemed it worth while to show any vestige of interest in the contest, whether the Admiralty or otherwise.

Commander Perrin disclaimed the major credit for the organisation, but said rather the full measure of praise should go to the Racing Committee, especially Colonel Bristow, who had devoted such valuable time to the details. In regard to the Admiralty, they did make a move—however late—as they had seen in the water that day. He wished to record the thanks of the Club to the R.A.F. for the faultless working of the wireless arrangements.

ROYAL AERO CLUB BANQUET

IN the evening an official banquet, at the invitation of Lieut.-Col. F. K. McClean, Chairman of the Royal Aero Club, took place at the Royal London Yacht Club, Cowes, when, in addition to a number of well-known men in the Aviation Movement, the officials of the race, the pilots of the various machines, constructors, etc., were present.

Col. McClean, in proposing the toast of the Pilots of the U.S. Machines, expressed their sympathy with the French in their bad luck that day and the other day when they were plucky enough to send two of their machines across the Channel in a howling gale. As to the British competitors, they were not bleating, although the firms responsible had taken on a contest against all the weight of a Government's backing. Everyone must admire the bull-dog tenacity of the Directors of the Supermarine Co. in their efforts to keep the Trophy this side, and also the gallant efforts of the Blackburn Co. in taking a share in the competition, whilst the regrets were acute in regard to the Hawker-Sopwith entrants who were unfortunately out before the trials. As to the organisation and help given to the Club for the race, he would mention first and foremost the name of Mr. Saunders, who had supplied a magnificent foundation upon which to build it up, and in this connection he specially also referred to Mr. Newman. Then, again, Mr. Goodenough, the Harbour Master, had been invaluable in his arrangements for the course and in patrolling during the tests. In addition, he gave thanks for the assistance given by the Cowes Urban Council, the Royal Yacht Squadron, the Royal London Yacht Club, the Motor-Boat Control, particularising Col. Millard, and the Royal Motor Yacht Club. For the faultless wireless service by the 10th Group, R.A.F., no thanks could be too great, and he also was appreciative of the sending by the Admiralty of 3 P. boats to assist in the Control. As to officials, one and all were so thorough he would not single out any one specially. He coupled with the Toast of the U.S. Team the names of Admiral Andrews and Lieut. Rittenhouse.

General Sir S. Brancker, in seconding, was of opinion that our glorious defeat was likely to do us good, and, moreover, had we won under our great handicap, the Admiralty would have at once said that they were right and everything was splendid. They now had something to worry about. There were plenty of millionaires in this country who now had a chance of being patriotic enough to provide the funds to bring back the Cup from America next year.

Admiral Andrews complimented the Club upon the wonderful organisation, and said they were very much obliged for the weather which had been supplied. He hoped to see the Cup pass back again, so that they might again come over here to try and re-capture it.

Lieut. Rittenhouse considered that they were helped to their aim by the perfect organisation throughout, which left them no doubts at any moment as to the course they should steer, *and* the weather. Moreover, their success must be shared by the whole team; not credited to the individual at all. What they appreciated more than anything was the splendid sportmanship shown throughout by everybody. It was an easy thing to win and smile, but not so easy to lose, still smile and applaud the victor with genuine admiration.

Lord Montagu having spoken, amongst others who were then called upon were:

M. Latham, who thought that they (the French team) had had bad luck and that was all there was to be said.

Commander Towers regretted the absence of Italy from the race and the ill luck of the French craft; the arrival of the Latham machine on the Tuesday night after its battle with the elements made him sad. It had to be remembered also that they (the U.S.) had their Government behind them, and that meant everything. He hoped to see Britain over in America to fetch back the trophy.

Colonel McClean then formally handed over the Cup to the custody of Admiral Andrews.

Mr. Scott-Paine then said they had nothing to complain of. They had lost to the better machines and men, but in the same breath he wished to apologise to Capt. Biard, as they did not give him a good enough machine. As to the engine, Mr. Vane had given them a unit that would have gone on for ever. He thought, as the reserve machine, they had not done so badly; they had finished. It was no good cursing the Admiralty. It was the Treasury which shut the door against expenditure. And it was money which was the real necessity to get a win. They would, however, do their best with their limited means to bring back the Cup next year. They had lost to better people, and they just had to try again to remedy it.

Capt. Biard said as to the Sea Lion not being good enough, it was just a case of her not being fast enough. Nothing else. The engine was, indeed, all right, but you could not get out and push. They expected the fastest machine to win, and it had.

Mr. Saunders considered what he had done was simply his duty as an Englishman. He referred to the change in spirit in these International contests compared with the past. In the old Monte Carlo days every entrant was suspicious of the other, and all sorts of protective arrangements were resorted to, whereas now, as had been seen, all the competitors were housed together in one shed with never a thought of trouble from anyone, and ever ready, if desired, to give a helping hand to their competitors.

Sir Geoffrey Salmond, Director of Supply and Research, in conclusion, thought that we should honour M. Schneider by reason of his having brought all nations together by his genius in presenting this Cup.

DURING the afternoon the United States representatives duly "celebrated," at the Royal Marine Hotel, where to the strains of their Naval band, open house was kept until about 4 o'clock, the final scenes being enlivened by the "charing" of pilots, constructors, officials and others, including the Admiral, at the front of the Hotel, where an enterprising local photographer was duly "taking notice."

The winner of the Schneider Cup Race, the American Navy-Curtiss, at her moorings.

THE MACHINES.

THE space at our disposal this week does not allow of detailed descriptions of the Schneider Cup machines. It is thought, however, both for the immediate interest and also to facilitate reference in years to come, that a few brief notes on the various machines may not be amiss. The American Navy-Wright, which crashed off the south coast a few days before the race, was illustrated in our issue of last week, and thus no further reference to it is considered necessary here.

The Navy-Curtiss Machines.—Designed originally for the Pulitzer race at Detroit, when the machine was a land 'plane, the Navy-Curtiss racers entered for the Schneider Cup Race this year represent the result of a large amount of research and practical experimental work carried out since the first machine was designed. Thus, although resembling the original machine, the two C.R.-3's are virtually new designs, with many departures and innovations. Fundamentally, the Curtiss-Navy racer is a twin-float seaplane with *monocoque* fuselage, small biplane wings, and a 465 h.p. Curtiss D-12 engine. A novel feature is the fitting of wing radiators, which must certainly be assumed to have had a very large share in the success of the machine, offering as they do little or no extra resistance.

The fuselage is of very small cross-sectional area, and is carefully streamlined. We believe that in a new type, developed for this year's Pulitzer race, this area has been still further reduced, so that the pilot actually sits on the floor of the fuselage. Further reduction, unless the pilots are asked to lie down while flying, does not seem possible, and it is of interest to note that in this case the overall depth and width of the fuselage are determined not by the dimensions of the engine, but by those of the pilot.

In the Schneider Cup racers the Curtiss D-12 engine is mounted in the nose and totally cowled-in, with the exception of the 12 short exhaust pipes on each side. In front the cowling is swept down towards the propeller boss, and gives a very clean entry for the air. The propeller itself is made from Duralumin sheet of about ¾ in. thickness near the root, filed down to almost nothing at the tips. At the boss these propellers are shaped to fit existing propeller shafts, but when the stage is reached where they can be produced in quantities, and a more suitable boss employed for them, it seems likely that the overall weight, which at present is rather considerable may be reduced to little if any more than that of the wood propeller, with its somewhat clumsy boss. There does not appear to be any doubt that the Duralumin propellers are giving excellent results.

The Curtiss D-12 engine is an exceptionally clean piece of work, and has the very great advantage that it offers a very small frontal area. It is of the 12-cylinder V-type, with four valves per cylinder and two double carburettors supplying the mixture. At a future date we trust to be able to give a more detailed description of this engine. In the meantime, suffice it to say that the engine, which has a compression ratio of 5.7 to 1, develops 465 h.p. at 2,300 r.p.m., and that the Schneider Race proved that the engine is capable of standing the strain for more than 200 miles at any rate. It might be mentioned that, in view of the high compression, a 50-50 mixture of "Shell" spirit and benzole was used in the race.

The wing surface radiators must add very considerably to the speed of the machine by doing away with the extra resistance of the usual type. They are beautifully made from thin brass sheet, fairly deeply corrugated as to the outer surface, while the inner surface is nearly flat, being merely slightly crinkled so as to enable it to take care of expansion and contraction with changes in temperature. It is a question whether this type of radiator is suitable for fighting 'planes, owing to the larger vulnerable area it presents, but for racing machines there can, we think, be no doubt any longer that it is very well worth fitting. On the Curtiss machines the radiators are slipped on over a light wooden wing covering.

The long floats of the Curtiss-Navy racer are of very simple design, with a single step and V-bottom. The top of the float is of circular camber, the crown of the camber forming a straight line as seen from the side. The floats are divided into a large number of watertight compartments, and in the navigability and six hours' mooring tests gave no trouble whatever.

The Supermarine "Sea Lion III" is generally similar to the "Sea Lion II" with which Capt. Biard won the Schneider Cup Race at Naples last year. The machine is a flying boat with hull of approximately circular section, on to which the two steps have been added as separate structures. Like all Supermarine boats, the "Sea Lion III" is a seaworthy craft, although its small size and relatively high landing speed would naturally be against its use far from a base. Fitted with slightly larger wings, however, the type should have many useful functions in connection with work with the Navy. Even with the small racing wings the "Sea Lion III" has a remarkable climb, as was ably demonstrated by Capt. Biard at the end of the Schneider Race, when he finished with a climb which brought the hull of the boat absolutely end-on to the spectators, the angle being approximately 45°, and this was not a zoom at the end of a speed burst, but a steady climb which the machine seemed capable of sustaining indefinitely. What she would do if fitted with larger wings one can only surmise, but there can be no doubt that the "Sea Lion III" could be adapted and developed to be a formidable weapon of war. The engine is a Napier "Lion" mounted on separate struts, so that the wing structure can be dismantled without interfering with the engine installation or *vice versa*. The pilot's cockpit is in front of the wings, so that he obtains an excellent view.

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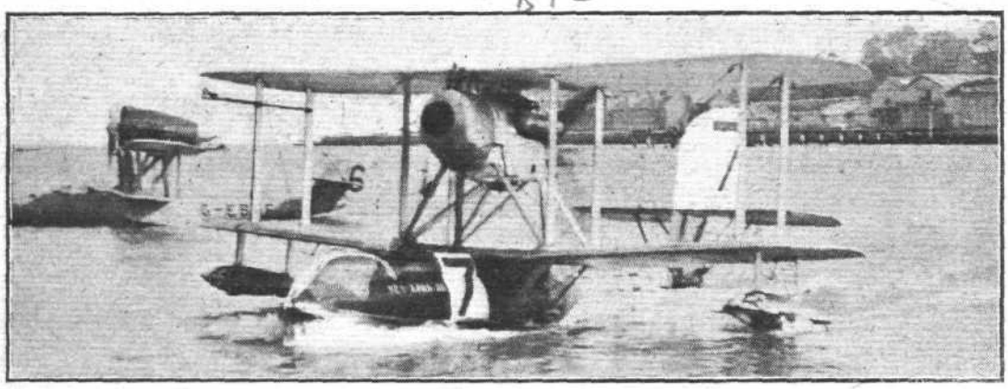
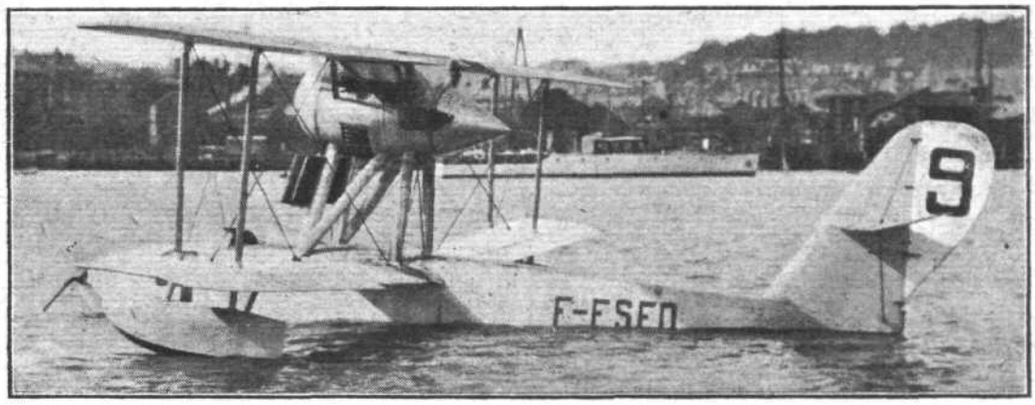


The Supermarine "Sea Lion III" taxi-ing slowly past the Blackburn "Pellet."

The manner of bringing the Supermarine boat up and down the slipways was a revelation to many. A light undercarriage with pneumatic wheels, that looked as though it might easily be fitted as a permanent part of the outfit, thus making the machine amphibian, was slipped into place in special sockets on the machine, and the Supermarine was wheeled along with an ease that formed a remarkable contrast to the more primitive methods used by some of the other competitors.

The Blackburn "Pellet" was an unusual design in several respects. Fundamentally she was a flying boat one-and-a-half 'plane, with the engine place on top of the top plane. The boat hull was, we believe, designed as long ago as 1917, and actually built during 1918, since when it has been lying in the Blackburn works. When it was decided to enter a machine for the Schneider Race it was closely examined, and was found to be in such good condition that there seemed to be no reason to suppose that it would not be up to the work. A few modifications were made, a few components replaced or reinforced, and the boat was finished. A new departure from usual practice was made in that the engine, instead of being placed between the planes, was mounted on top of the top plane. As the lower chord was small, the gap could be reduced, and



The C.A.M.S. 38 at her moorings.

consequently the centre of gravity was not as high as it would have been otherwise. Nevertheless, the machine looked somewhat top-heavy, although in point of fact it is possible, or even probable, that the c.g. was no higher than usual in flying boats.

The pilot's cockpit was ahead of the wings, although the machine was of the tractor type. In this respect the "Pellet" differed from the C.A.M.S. 36 *bis*, in which the pilot sits behind the wings. A Lamblin radiator was fitted between the struts supporting the engine.

The C.A.M.S. 38 is a flying boat with 360 h.p. Hispano-Suiza-engine. Like all the other machines of M. Conflenti's design, it has a single concave step and flat sides, a shape which gives quite a different wave formation from that of our own boats. On a calm sea this type of step certainly appears to work extremely well, but we do not know how it behaves in a rough sea, as we have never had an opportunity of watching one of these boats in a seaway.

The C.A.M.S. machines are always of very neat and smart appearance, and everything is well streamlined. The 38 is no exception to the rule, as will be seen from the accompanying photographs, and the fact that the machine took nearly 20 minutes to complete a lap of the course indicates that already on the first lap the engine was giving trouble. Certainly the machine is very much faster than that, and probably her real speed is in the neighbourhood of 165 m.p.h., which should have enabled her to cover a lap of this year's course in something like 15½ minutes.

The C.A.M.S. 36 *bis* is very similar to the 38, but is an older design, and the 360 Hispano-Suiza drives a tractor screw instead of a pusher. The pilot's cockpit, as already mentioned, is placed aft of the wings. Personally we rather prefer this placing, as it would seem to give the pilot a better chance in the case of a crash, but Mr. Santoni informs us that the 36 *bis* is nothing like as fast as the 38, and that the pusher arrangement has been found far superior as regards speed. The engine is very neatly cowled in, and Lamblin radiators of the latest pattern are fitted on the engine struts. These radiators appear to represent a distinct improvement on the previous model, and already several successes have been scored by machines so equipped. In the near future we hope to give a description of the new Lamblin.

*The Latham L.*1 is a twin-engined flying boat, with two Lorraine-Dietrich engines of 400 h.p. each, placed one behind the other in the gap between the deck of the boat and the top plane. As both engines run in the same direction normally it follows that when they are placed back to back, so to speak, they drive in opposite direction. The tandem arrangement as applied to engines on the wings has not been found very successful in this country, but seems to work quite well when the engines are centrally placed. We noticed also that front and rear airscrews seemed to be of the same diameter, a feature in which the L.1 differs from British practice, where the front and rear screws are usually of different diameters.

The hull of the L.1, the designer and constructor of which is M. Latham, a cousin of the famous French pioneer pilot, is flat-sided, but differs from the C.A.M.S. hulls in having a pronounced V-bottom. The machine gives the appearance of being very strongly built, and should be a good seaworthy boat. It did not seem to be frightfully fast, and had probably been chosen to represent France chiefly in case the day of the race (and more particularly the previous day) should have turned out rough.

A feature which is new to us was noticed in the wing bracing, which consisted of laminated streamline wires. We believe that M. Latham has patented this form of wire, which consists of several separate wires placed side by side, the inner one being of the greatest width, the next ones narrower, and so on. Thus in case of a flaw in one lamination the complete wire is only weakened somewhat, but has still, if the factor of safety has been chosen high enough, more than sufficient strength for its work. The idea seems to have a good deal to recommend it, and might be worth investigation.

While on the subject of the Latham flying boat we cannot refrain from mentioning the exceptionally fine flight made by Duhamel on Tuesday, September 25, when he crossed the Channel in this machine, in a wind which must at times have reached a strength of close on 60 miles per hour. He made the crossing without incident, and arrived safely at Cowes, where, unfamiliar with the locality, he passed the Saunders sheds and landed well up the Medina, above the floating bridge. His fine piloting, although he was deprived of his chance of flying in the race, was greatly admired by the British aviation fraternity, who were all very sorry that he was unable to start in the Schneider contest.

The Latham L.1 at her moorings.

THE LIGHT 'PLANE COMPETITIONS AT LYMPNE, OCT. 8–13

Twenty-Eight Machines Entered

ROYAL AERO CLUB NOTICE.

Light 'Plane Competition, Lympne.

Members and Associates will be admitted free to the Aerodrome on presentation of their Membership Badges.

Table of Entries for the Light 'Plane Competitions

Entrant and Pilot	Machine and Engine.
1. Grigg Motor and Engineering Co.	Biplane (Grigg).
2. Major O. T. Gnosspelius and J. L. Parker (J. Lankester Parker)	"Gull" monoplane (Blackburne).
3. English Electric Co. (Squad-Leader M. E. A. Wright, A.F.C.)	"Wren" cantilever monoplane (A.B.C.).
4. English Electric Co. (Flight-Lieut. W. H. Longton, D.F.C., A.F.C.)	Ditto.
5. A. V. Roe & Co. (B. Hinkler)	Tractor biplane.
6. A. V. Roe & Co. (B. Hinkler)	Tractor cantilever monoplane (Blackburne).
7. Gloucestershire Aircraft Co. (L. L. Carter)	Gloucestershire "Gannet" biplane (Carden)
8. De Havilland Aircraft Co. ..	D.H. 53 light monoplane (Douglas).
9. George Parnall & Co. (Capt. Norman Macmillan, M.C., A.F.C.	Monoplane (Douglas).
10. Vickers, Ltd. (Capt. S. F. Cockerell, A.F.C.)	Vickers "Viget" biplane (Douglas)
11. G. S. Bush and Flying Officer H. A. Hamersley, M.C. (Flying Officer H. A. Hamersley, M.C.)	Tractor biplane (Douglas).
12. A. S. Butler (Major H. Hemming)	D.H. 53 light monoplane (Douglas)
13. F. P. Raynham (F. P. Raynham)	Handasyde monoplane (Douglas).
14. Royal Aircraft Establishment Aero Club (Flight-Lieut. P. W. S. Bulman, M.C., A.F.C.)	R.A.E. Aero Club Aircraft No. 2 "The Hurricane" tractor monoplane (Douglas).
15. Louis Peyret (A. Maneyrol) ..	Peyret (Sergant).
16. Jean B. Richard (Baron Georges Kervyn de Lettenhove)	"Poncelet" monoplane (Sergant).
17. The Addlestone Aeronautical Association, Ltd. (J. Herbert James)	Air Navigation & Eng. Co., Ltd.'s light monoplane (Blackburne).
18. Hubert Blundell (Maurice W. Piercey).	Ditto.
19. Major O. T. Gnosspelius and J. L. Parker (Capt. R. H. Stocken)	"Gull" monoplane (Blackburne)
20. P. W. Kingwell (H. Sykes) ..	Tandem monoplane (A.B.C.)
21. Geo. A. de Ro (V. Simonet) ..	Poncelet monoplane (Sergant)
22. Louis Peyret (A. Maneyrol) ..	Peyret monoplane (Douglas)
23. A. G. Pointing and J. T. Jeyes (Pointing/Jeyes)	Tractor cantilever monoplane (Douglas)
24. Geo. Parnall & Co. (Capt. N. Macmillan)	Parnall Pixie II (Douglas)
25. Major Vernon A. Bradshaw (C. Barnard)	Tractor cantilever monoplane (A.B.C. or Douglas)
26. Handley Page, Ltd. (G. P. Olley)	Tractor cantilever monoplane (Blackburne)
27. Percy Salmon (F./O. C. A. Bouchier)	Salmon tandem (Bradshaw)
28. The Falcon Aircraft Co. ..	Falcon No. 1 Tractor monoplane (J.A.P.)

On Monday of next week the light 'plane competitions for prizes presented by the Duke of Sutherland, the *Daily Mail*, Messrs. Abdulla and Co., Ltd., the Society of Motor Manufacturers and Traders, and the British Cycle and Motor Cycle Manufacturers' and Traders' Union, will commence at Lympne Aerodrome near Hythe, Kent. No less than 28 light 'planes have been entered, and the competitions promise to be most interesting, although it is doubtful if they will teach us anything new. The rules for the competitions have already been published, and it will suffice here to recapitulate the main points. The *Daily Mail* is offering a prize of £1,000, open to the world, for the greatest distance flown on one gallon of petrol, a minimum of 50 miles per gallon being stipulated, and the engine capacity not to exceed 750 c.c.

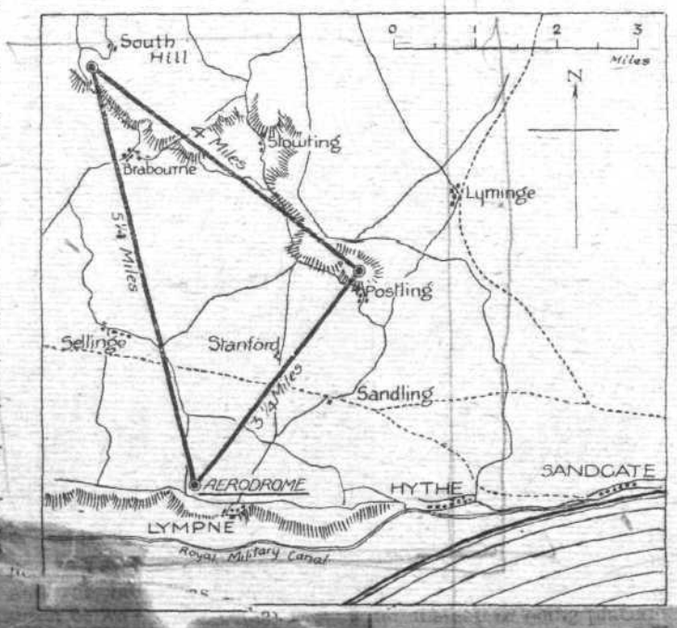
The Duke of Sutherland, who was the first to offer a prize for light 'planes, is giving a prize of £500 for mileage per gallon, the rules being the same as those governing the competition for the *Daily Mail* prize, but the competition being confined to British pilots flying British machines.

Abdulla and Co., Ltd., are offering a prize of £500 for the greatest speed attained with a machine fitted with an engine not exceeding a capacity of 750 c.c. This prize is open to the world.

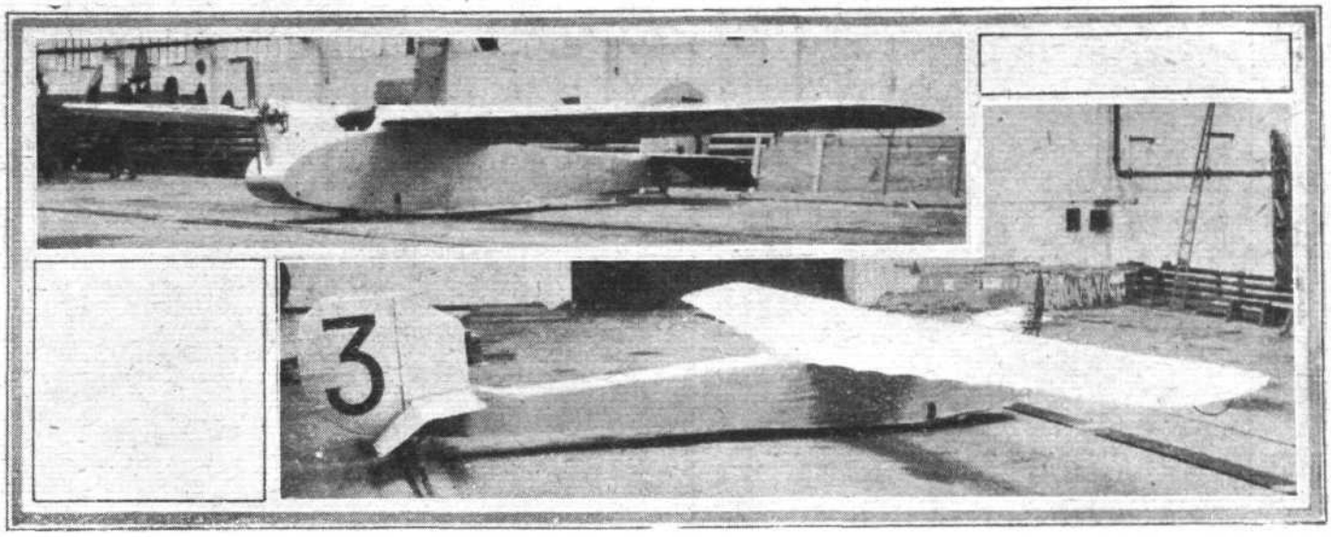
The S.M.M.T. and the B.C.M.C.M.T.U. are offering £150 each for the greatest number of completed circuits over the course during the competitions, provided a minimum of 400 miles has been attained.

The course that has been chosen is shown approximately on the accompanying sketch-map. The starting and finishing point is at Lympne aerodrome. One turning point, to be marked by a white cross, will be the top of the hill to the north-north-west of the little village of Postling. The second turning point will be the top of the hill at South Hill, on a low range running from Postling in a north-westerly direction. The last leg of the course will be from South Hill to Lympne aerodrome. The total distance of the course is 12½ miles, and as both turning points are situated fairly high the machines should be within sight of Lympne the whole time. When the competitions were first announced it was stated that one leg of the course would run along a range of hills in order that competitors might be able to take advantage of any rising currents. While the letter of the announcement has been kept, it does not seem likely that the range chosen is likely to be of much assistance, nor do we think any of the competitors are counting much on any assistance from winds blowing up a slope.

A change has been made in the manner of issuing fuel to the competitors. It was originally intended that each competitor should be served out with one gallon of petrol, and should then fly as far as he could on it. It has now been decided to issue a certain measured quantity over and above one gallon, letting competitors go over the course as many times as possible and measuring the amount left in the tank at the finish. It is, however, stipulated that all machines must finish their attempts at Lympne by flying across the finishing line. If landings are made outside the aerodrome, the flight will not count for the competitions. If a competitor



THE LIGHT 'PLANE COMPETITION: Sketch map of the course.



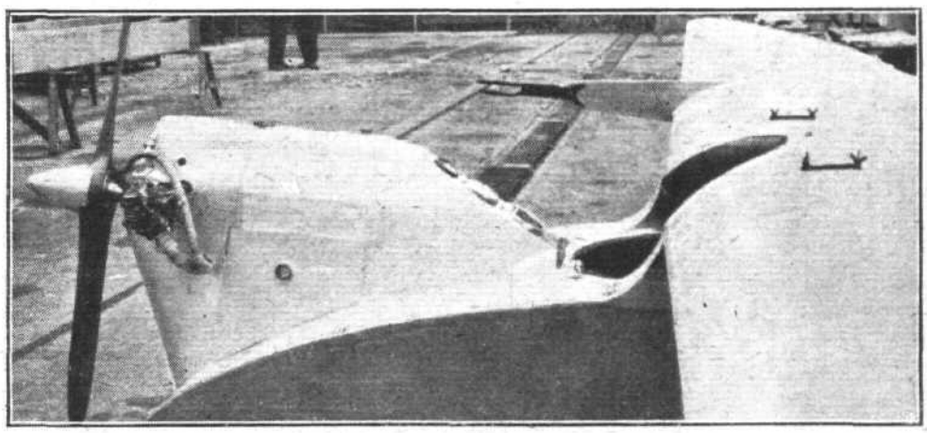
THE NEW "WREN": Two views, taken at the Preston works of the English Electric Co., of the first of the competition "Wrens," which has now been finished and tested. This machine flies quite well on half throttle.

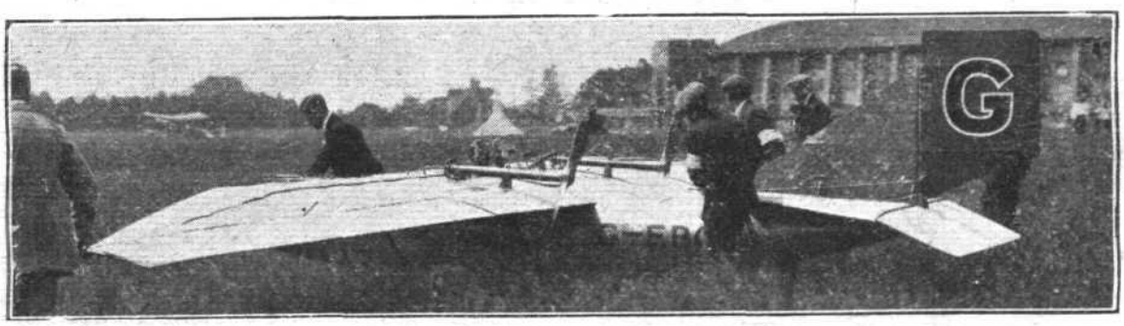
has consumed less than one gallon, he will be treated as if he had used one gallon. Thus it will not pay a competitor to alight after having consumed, for instance, ¾ gallon, as his consumption will not be calculated *pro rata* in this case. On the other hand, if a competitor under-estimates his consumption, and does not succeed in reaching the aerodrome on the measured excess quantity, his flight will have been wasted. Thus there will probably be some close shaves in the matter of just getting home, and no doubt a few miscalculations resulting in forced landings outside the aerodrome. However, that is preferable to forced landings right out in the country, where it might take a day or more to bring back the machine for a fresh start.

The speed competition for the Abdulla prize of £500 will be flown over the same course, and will consist of two laps of the course, or a distance of approximately 25 miles. It is not quite clear from the rules and regulations published so far whether competitors will be allowed to make their attempt when and as often as they like, or whether a certain day or time will be set aside for this competition. From the spectacular point of view it would be preferable to start the machines off together, so that the first man home on the second lap would be known to be the winner. It seems unlikely, however, that this will be feasible, and probably some other arrangement will be chosen which, if less easy to follow by the spectators, will be safer for the competitors.

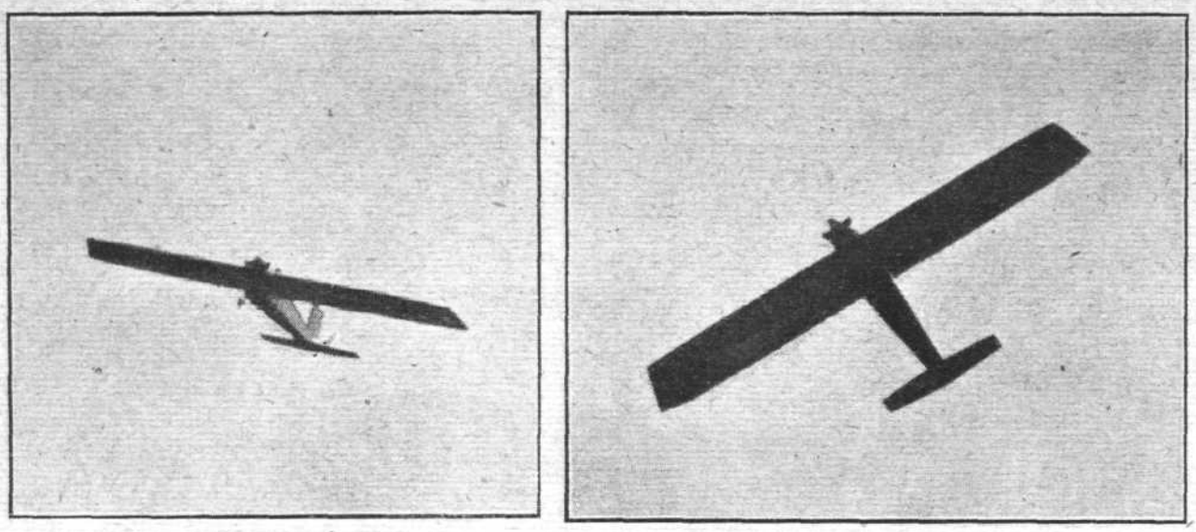
With reference to the S.M.M.T. and B.C.M.C.T.U. prizes, totalling £300, to be awarded for the greatest number of circuits of the course, completed during the meeting, th 400 miles minimum stipulated does not appear to be a v great distance spread over a whole week. If, however assume that a machine does, for instance, 60 miles per ga it will cover five laps of the course, giving a total distan of 62.5 miles. Thus, before having qualified for the greatest number of miles flown, a machine will have to average more than one attempt per day for the large prizes. There should,

The Competition "Wren": The A.B.C. engine is neatly cowled-in, and the instrument-board is mounted just in front of the pilot, on the sloping back of the engine fairing, where it is easily visible.





THE GNOSSPELIUS "GULL": This photograph shows the machine being brought out for a flight. Note the long grass on Lympne aerodrome.



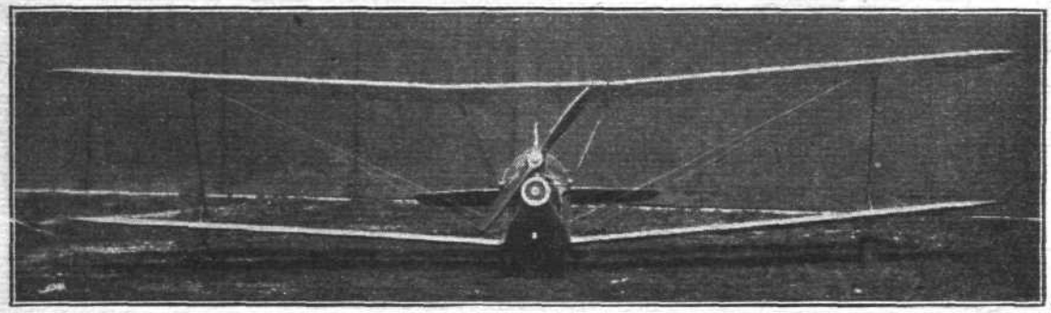
Two views of Raynham out testing his Handasyde light 'plane.

therefore, be every encouragement to competitors to do as much flying as possible during the week. From the rules it appears that a competitor may fly, in addition to any of his flights for the *Daily Mail* and Sutherland prizes, as many single circuits as he chooses, provided they are completed and the finish of them takes place at the Lympne aerodrome. The flights in the other competitions automatically count towards his total mileage. We welcome this particular competition because it should tend to bring machines out even when weather conditions are not very favourable for the "economy" prizes. Thus there should be an opportunity of studying the behaviour of the various machines under different conditions, in calms as well as in fairly high winds.

THE AVRO BIPLANE, TYPE 558.

500 c.c. Douglas Engine.

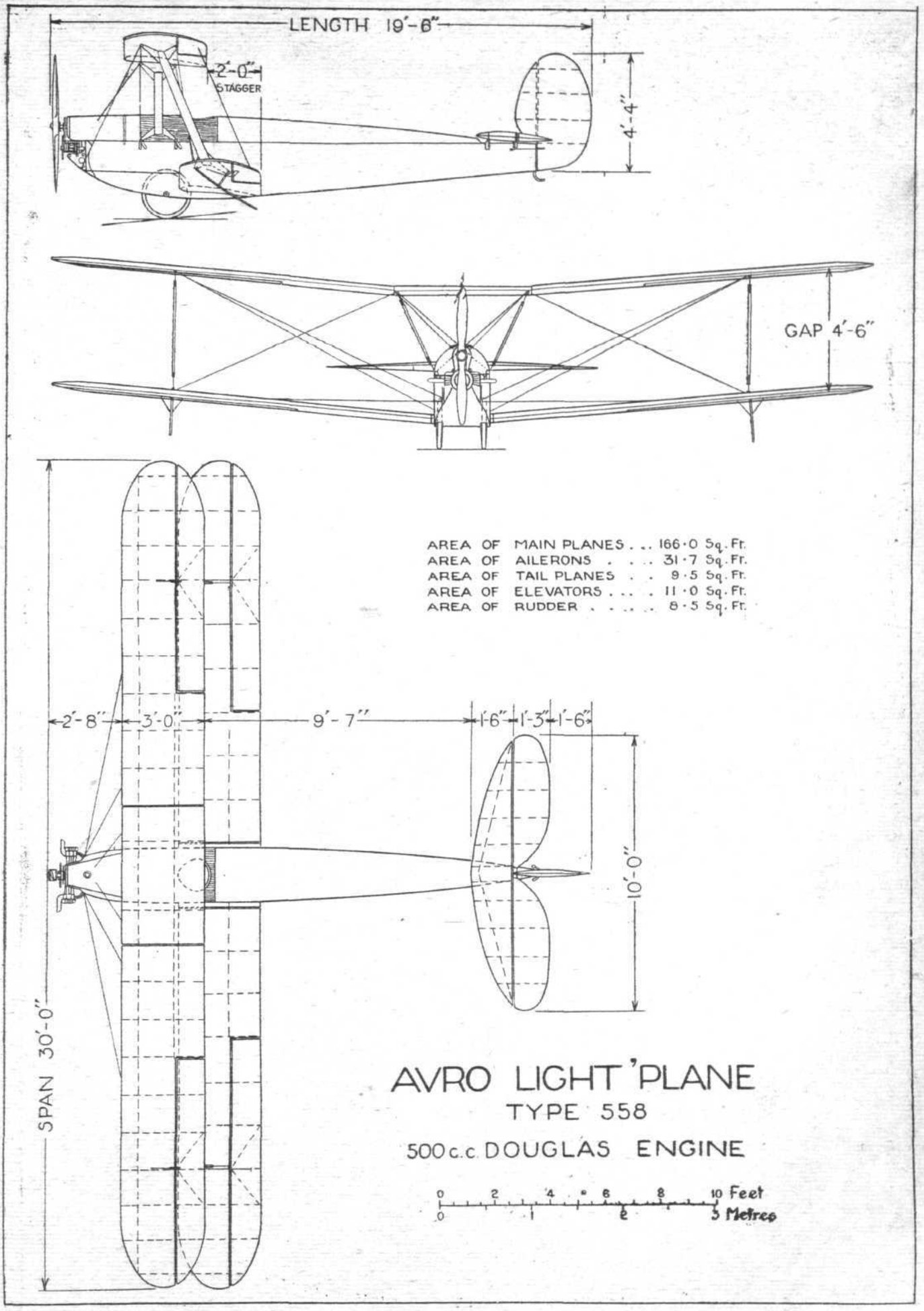
IN the case of the machines entered by A. V. Roe and Co. for the competitions next week, a good deal of interest is added by the fact that this firm is not new to the design and construction of low-powered aeroplanes. It will be remembered that one of the first to fly in England on a British designed and built machine was Mr. A. V. Roe, who succeeded in making a number of flights on a triplane fitted with a 9 h.p. J.A.P. engine. Even in modern times, A. V. Roe and Co. have been the champions of the low-powered aeroplane, in that shortly after the War they produced the Avro "Baby," with 35 h.p. Green engine. Coming as it did after a period during which one had seen very few machines with engines of less than a couple of hundred horse-power, the Avro "Baby" was regarded as quite an exceptional type, as indeed it was, compared with other machines of that time, and that it was more than a toy was demonstrated by the fact that several noteworthy flights were made on it, such as a non-stop flight from London to Turin, piloted by Bert Hinkler, and an 800-mile flight, also non-stop, out in Australia, by the same pilot.



The Avro light biplane: Front view.

The large prizes offered by the *Daily Mail*, the Duke of Sutherland, and others, for the forthcoming competitions at Lympne have produced a batch of light 'planes of different types, but, as already stated, in view of their connection with low-powered flight in the past, quite exceptional interest attaches to the Avro machines. We understand that three machines have been built, and will be entered, of which two

The Avro light biplane: Three-quarter front view.



THE AVRO LIGHT 'PLANE, TYPE 558, 500 c.c. DOUGLAS ENGINE : General arrangement drawings, to scale.

The Avro light biplane: Side view.

are biplanes and one a monoplane. The two biplanes will differ only in the engine fitted, the one having a geared-down 500 c.c. Douglas and the other a direct-drive B. and H. engine. The monoplane is fitted with a 700 c.c. Blackburne V-type engine, with direct drive.

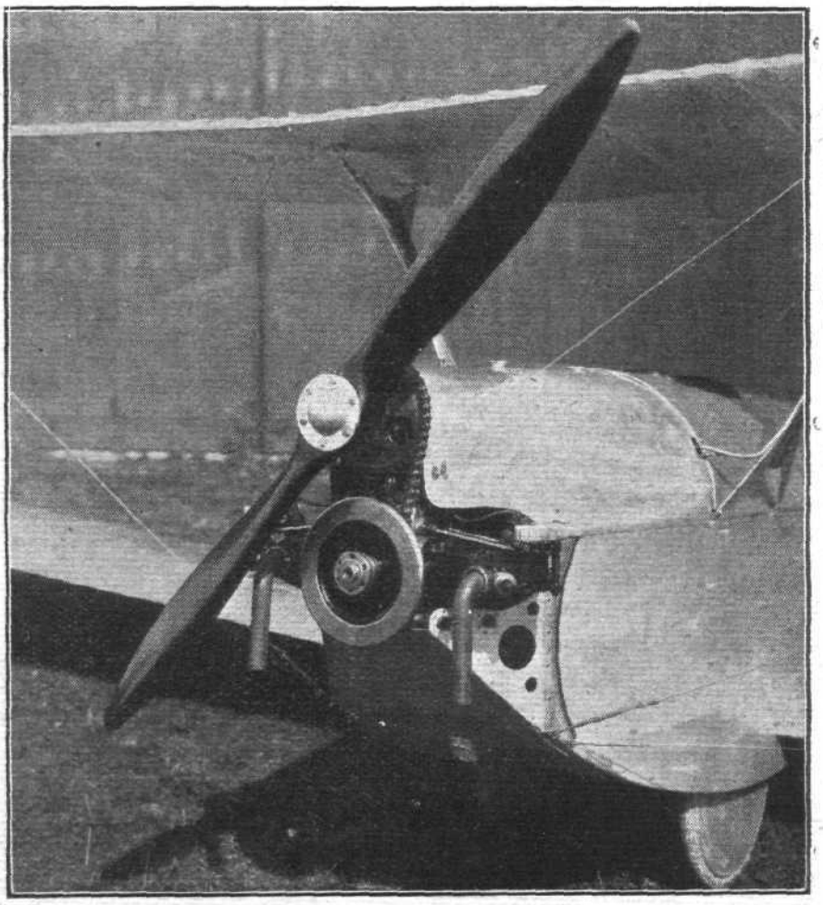
The Avro light 'plane biplane, which carries the series number 558, is of rather unusual design, and yet the designers have managed to retain in this machine certain lines, proportions, etc., which immediately stamp the machine as an Avro. For instance, if the top plane in either the side view or three-quarter front view of the machine, published herewith, is covered up, one immediately sees that the machine is an Avro, the lines of the fuselage being somehow typically Avro in spite of certain departures, such as wheels inside the fuselage and a cycle engine in place of the more usual aero engines.

The main feature of the Avro light 'plane 558 is perhaps provided by the biplane wings, which are of high aspect ratio (10), and have a very pronounced stagger. The general lay-out of the machine is well shown in the accompanying scale drawings and photographs, and it will be seen that there is a fairly wide-span top centre section, carried on two I-struts, while the planes themselves are separated by one I-strut on each side. These struts are of unusual design, inasmuch as they consist of solid spruce struts of streamline section, into the slotted ends of which are riveted V-shaped Duralumin plates, bolted to fittings on the wing spars. The external bracing is in the form of plain, solid, circular section wire, and there are two lift wires on each side and one landing wire. Owing to the large span and narrow chord an external drag wire is taken from the nose of the fuselage to the spar. The internal construction of the wings is of standard type, in so far as the spars are of box-section made of spruce, and the ribs have spruce flanges and three-ply webs. The leading and trailing edges are formed by small diameter steel tubing.

The fuselage is of somewhat unusual construction, in that it consists of four longerons braced with diagonal struts forming a Warren girder, the struts being attached to the longerons by three-ply plates. The top longerons form a straight horizontal line, and the main structure of the fuselage is fairly shallow, being made up to the required overall depth by a deep deck fairing consisting of spruce stringers supported on three-ply formers. The sides are not quite flat, as stringers have been added on the outside of the struts so as to bring the fabric clear of the latter. The whole of the fuselage is fabric covered.

The undercarriage is of very simple type, and consists of two bicycle wheels of 22 ins. diameter carried on a steel tube axle sprung by rubber cord. The wheels are so mounted that only about half of their diameter projects through the floor of the fuselage, and they thus present very little head resistance. The narrow wheel track thus afforded is made up for by wing tip skids on the lower plane, and from the illustrations it will be seen that even when the machine is standing on the ground the skids almost touch, so that the machine cannot lean over more than a very small amount before the skids touch and steady it.

The 500 c.c. Douglas engine is mounted on Duralumin plates projecting forward from the sides of the fuselage and carrying cross-tubes on which the engine is mounted, the propeller-shaft being mounted in ball bearings above the crank-case and magneto. The reduction gearing is 2½ to 1. The propeller is of large diameter, and should be very efficient. The petrol and oil is carried in a twin tank mounted on the top longerons immediately behind the engine, which gives sufficient height to enable direct gravity feed to be used. A large petrol filter is introduced between the tank and carburettor. Lubrication is by means of a Best and Lloyd drip feed lubricator.



The Avro light biplane: View of engine mounting, chain transmission, etc.

The tail of the Avro 558 consists of a cantilever tail plane to which is hinged the divided elevator, and of a fairly large balanced rudder, hinged to the sternpost of the fuselage. There is no fixed vertical fin. The controls are of usual type, a joy-stick being used for the elevator and ailerons. The rudder control is, however, somewhat unusual in that pedals are used in place of the ordinary foot-bar.

The Avro biplane has already made several flights, and has been found to handle extraordinarily well. Probably owing to the high aspect ratio and great distance between main planes and tail, a feature which is also characteristic of that ever-popular machine the Avro 504, the machine has a great amount of natural stability, and we understand that on several occasions Capt. Hamersley has flown it hands off. The view from the pilot's cockpit should be exceptionally good, as the fuselage is narrow, and the pronounced stagger brings the bottom plane well aft, so that the pilot can look almost vertically downwards over the side of the fuselage. The deck over the cockpit is hinged, and only the pilot's head projects through the opening.

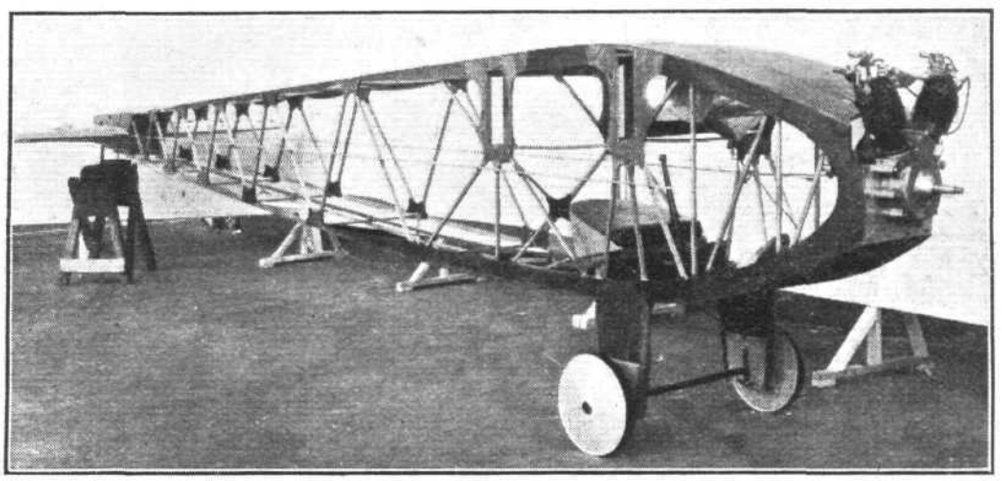
The main characteristics of the Avro 558 are as follows: Length, 19 ft. 6 ins.; span, 30 ft.; chord, 3 ft.; stagger, 2 ft.; gap, 4 ft. 6 ins.; wing area, 166 sq. ft.; weight empty, 294 lbs.; weight loaded, 480 lbs.; engine, 500 c.c. Douglas, developing 18 h.p. at 5,400 r.p.m.; wing loading, 2·89 lbs. per sq. ft.; power loading, 26·7 lbs. per horse-power.

THE AVRO LIGHT MONOPLANE, TYPE 560

700 c.c. Blackburne Engine.

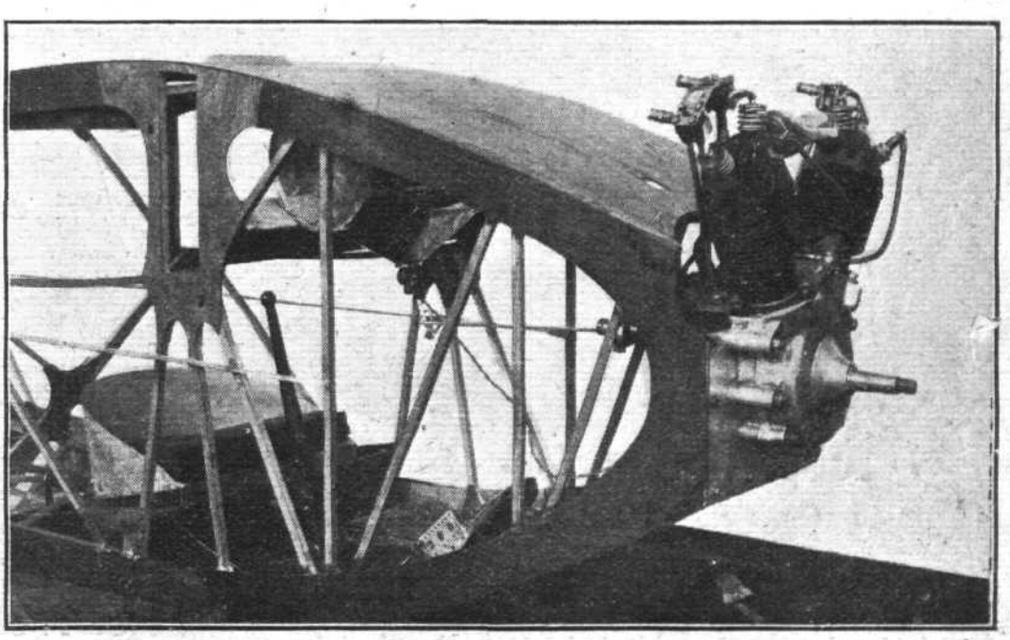
THE Avro type 560, built for the competitions at Lympne, is a cantilever monoplane which, although in external appearance following the usual practice, has several unusual constructional features.

The fuselage is of somewhat similar construction to that employed in the biplane, although the external shape is rather different. The four longerons are of spruce with spruce struts running diagonally to form a Warren girder, the struts being attached to the longerons by means of three-ply "biscuits" glued and nailed in position. As in the case of the biplane fuselage, the covering is fabric throughout, longitudinal stringers keeping this clear of the struts, etc. Except for the fact that it is practically flat-sided and with flat deck and bottom, the fuselage of the Avro monoplane is of very good streamline form, and should offer very little resistance.

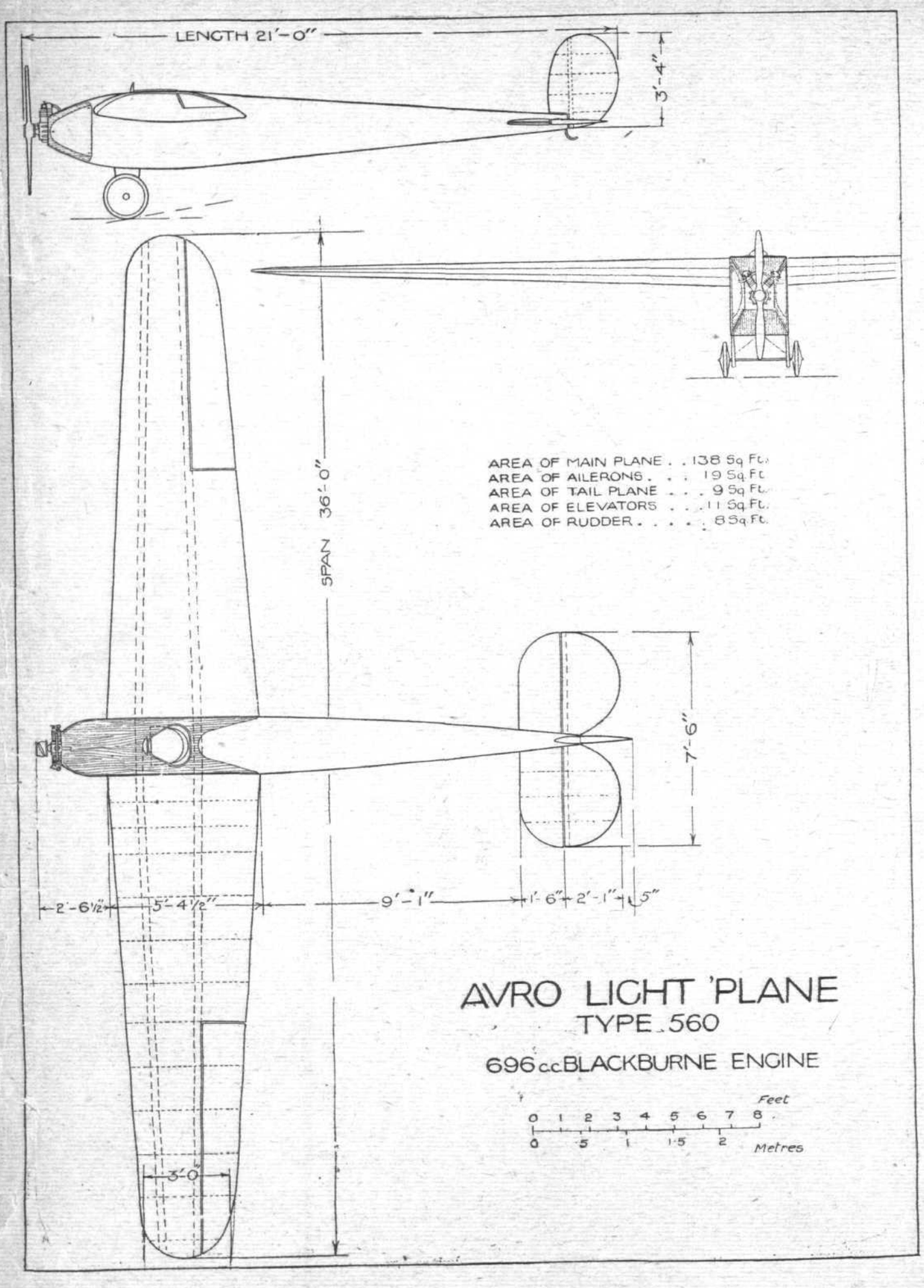


The Avro light monoplane: View of the fuselage in skeleton.

The monoplane wing has a pronounced taper both in chord and thickness, and is built in two halves. At the root the wing spars project a considerable distance beyond the inner rib, and fit into openings in the fuselage, where they are bolted together by means of special joint plates to form a continuous girder. The wing section used is of the bi-convex type, somewhat similar to some of the American sections described in FLIGHT of May 24, 1923. The spars are built-up box-sections, with flanges of solid spruce and walls of double



The Avro light monoplane: View of engine mounting, tank, etc.



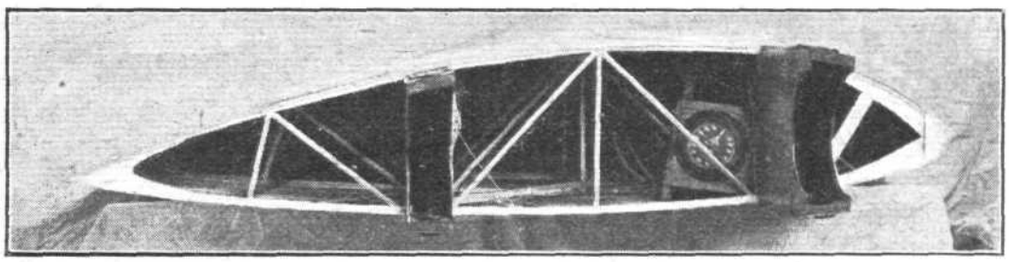
THE AVRO LIGHT 'PLANE, TYPE 560, 700 c.c. BLACKBURNE ENGINE : General arrangement drawings, to scale.

diagonal spruce skins. This form of construction has been found to give an extremely rigid spar. The ribs have T-section spruce flanges tied together by means of corrugated Duralumin struts and ties. The drag bracing is formed of spruce struts and ties arranged in the form of a Warren girder and attached to the spare by means of three-ply " biscuits." The wing covering is of special light linen fabric, doped with Titanine glider dope.

The tail plane is made in two parts, which fit into suitable attachments inside the rear end of the fuselage, the two halves of the tail being fastened together so as to form a continuous member, and no external bracing is required. It is quite evident that considerable care has been taken in designing the tail unit so as to make it offer as little resistance as possible. The elevators are of the unbalanced type, hinged to the rear spar of the fixed tail plane. The rudder is of the balanced type, with a strong box-section main spar and spruce ribs. The ailerons and elevators are operated by a walnut joy-stick mounted on a universal joint at its lower end. The aileron control is by means of cables, but the elevators are operated by a long push-and-pull rod. As in the biplane, the rudder is operated by means of pedals.

The 700 c.c. Blackburne engine is mounted on an engine plate of the simplest possible form, *i.e.*, a flat plate of 8 gauge Duralumin, to which the engine is bolted direct by the horizontal bolts through the lugs on the crank-case Direct drive is employed, a ball thrust bearing being housed in a cage on the front end of the crank-case. The petrol tank is mounted just under the deck of the fuselage, immediately ahead of the front spar, and a specially long induction pipe has been fitted so as to give direct gravity feed to the carburettor.

The undercarriage is of very simple form, and consists of two light wooden wheels mounted on a steel tube axle. This axle is supported from the fuselage by two struts on each side. These struts are placed some considerable distance apart, so as to provide space for the rubber shock absorbers, which, with the rest of the struts, are streamlined by covering the space between the struts with metal over the lower portion and three-ply over the upper. The struts are braced laterally by short tubes running diagonally to the centre of the fuselage.



The Avro light monoplane: End view of a wing, showing bi-convex section used. The air-speed indicator is mounted inside the wing so that the pipes need not be broken when dismantling the machine.

The pilot's cockpit is arranged between the front and rear spars of the wing, and an interesting feature is that the air-speed indicator is mounted in the root of the wing, so that when the machine is dismantled for transport the instrument is removed with the wing without the necessity for breaking the connections. The tail skid is in the form of a bent steel tube mounted in vertical bearings, and the landing shocks are taken by a coil spring.

The main characteristics of the Avro monoplane type 560 are as follows: Length, o.a., 21 ft.; span, 36 ft.; maximum chord, 5 ft. 4½ ins.; minimum chord, 3 ft.; wing area, 138 sq. ft. The weight of machine empty is 285 lbs., and it will carry a load of 180 to 200 lbs. The wing loading is 3·4 lbs. per sq. ft., and the power loading 23·5 lbs. per h.p., with the engine developing 20 h.p. at 3,200 r.p.m.

THE GLOUCESTERSHIRE "GANNET" LIGHT 'PLANE.

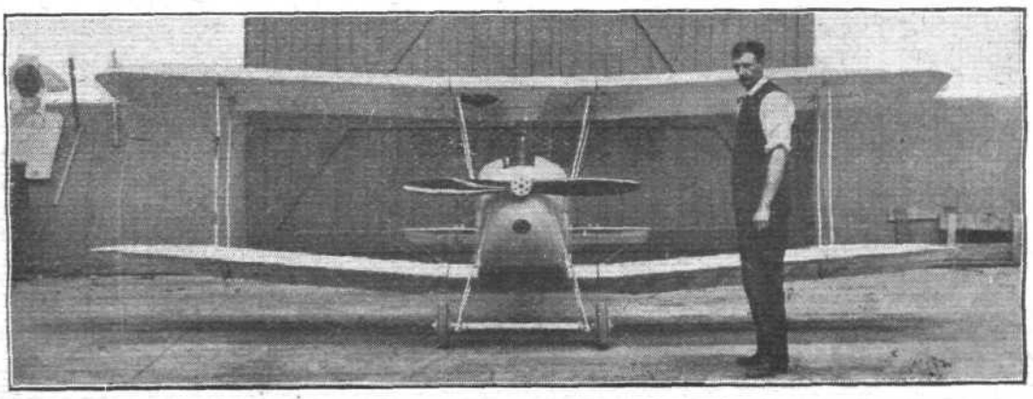
750 c.c. Two-Cylinder Two-Stroke Engine.

THE light 'plane designed by Mr. H. P. Folland, chief engineer and designer to the Gloucestershire Aircraft Company, Ltd., for the competitions at Lympne, is a very neat little biplane with folding wings and two-cylinder two-stroke air-cooled engine, specially designed and built for this machine. The machine is well shown in the accompanying scale drawings and photographs, from which it will be seen that the design follows along orthodox lines.

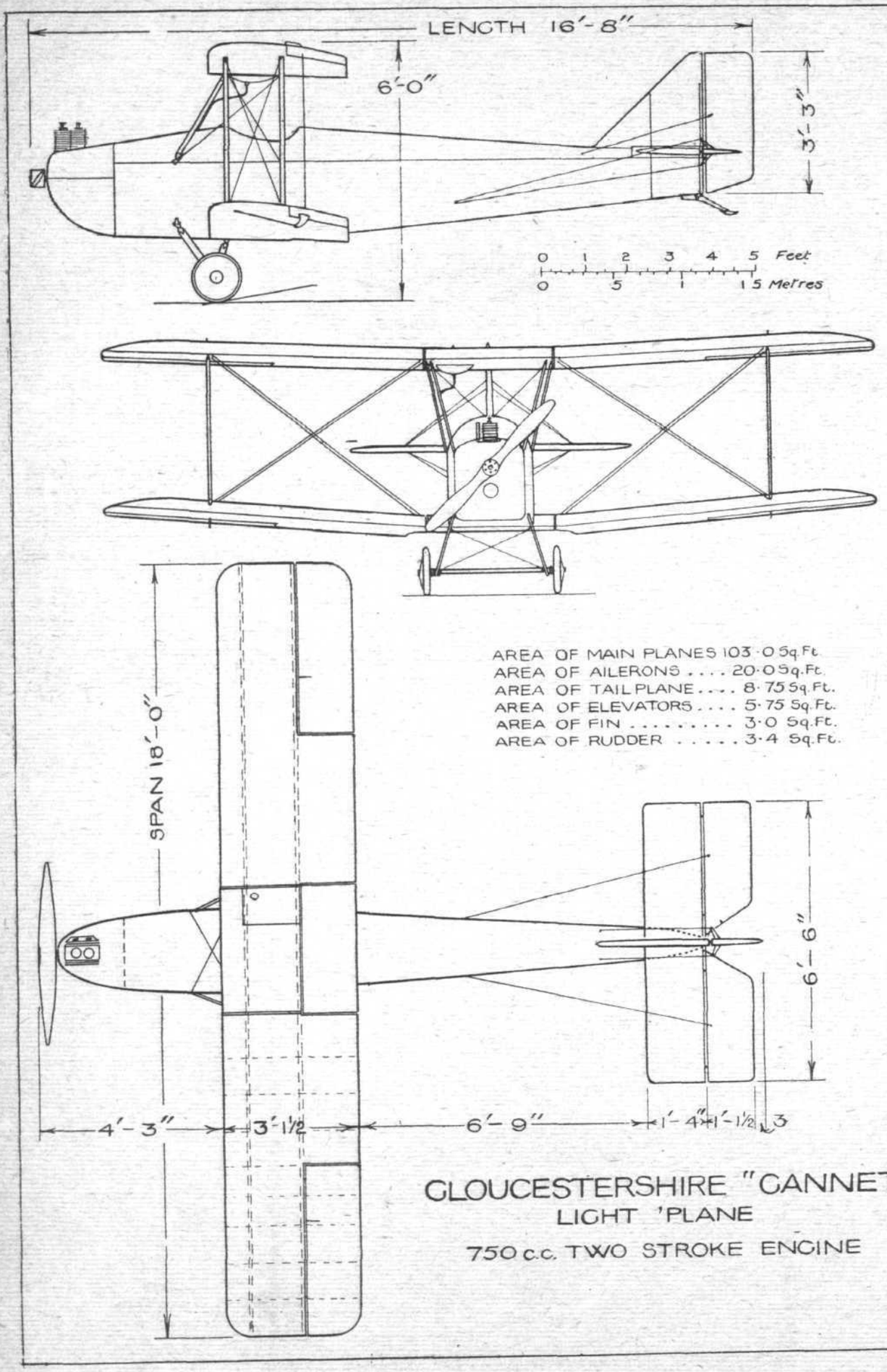
The fuselage is of the ply-wood covered type, with flat sides, but a fairly deep deck fairing, consisting of spruce stringers on light formers and covered with fabric, is employed, as well as a shallower fairing underneath the bottom of the fuselage. Attached to the lower longerons of the fuselage is a bottom centre section, which remains in place when the wings are folded. A top centre section is carried on four streamline tubular struts, of which the rear pair is vertical in side view, although raked outward, as seen from in front.

The wings are of standard construction, and of fairly thick section. The spars are I-section, spruce beams, and the ribs have spruce flanges and struts, with cut-out three-ply webs' The drag bracing is in the form of solid, circular-section wire and the bays are kept very short, so that, although the distance between the spars is not great, the angle of the wires is very good. Streamline steel tube struts separate the upper and lower wings, and the bracing, which is arranged in the usual way, is in the form of streamline wires.

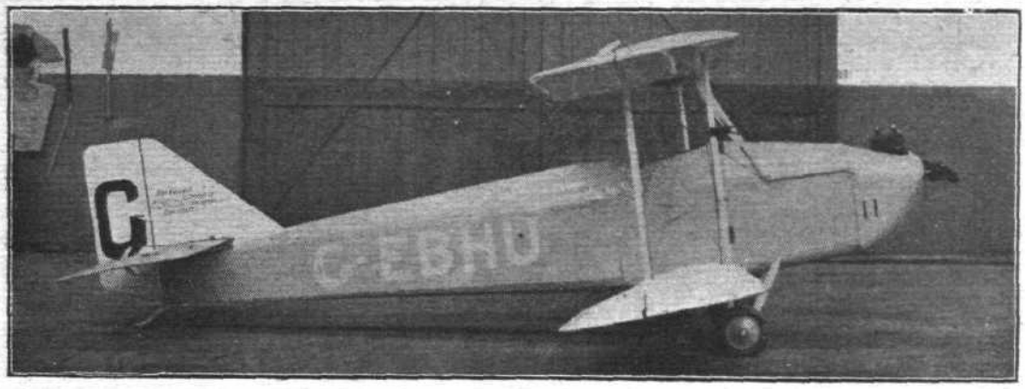
As already mentioned, the wings are designed to fold back, the rear spars being hinged to the rear spars of the top and bottom centre sections, with quick release locking-pin arrangements on the front spars. In order to fold the wings, the trailing edge of the top centre section is folded upwards and that of the bottom centre section downwards, when the wings are free to fold back along the fuselage, as shown in one of the illustrations. The whole operation can be performed very quickly. The tail is of usual form, consisting of a wire-braced fixed tail plane with divided elevator, and of a triangular fin, to which is hinged the rudder. Both rudder and elevators are of the unbalanced type.



The Gloucestershire "Gannet": Front view. A good idea of the size of the machine may be formed by comparison with the man standing in front.



THE GLOUCESTERSHIRE "GANNET" LIGHT 'PLANE, 750 c.c. TWO-CYLINDER TWO-STROKE ENGINE: General arrangement drawings, to scale.



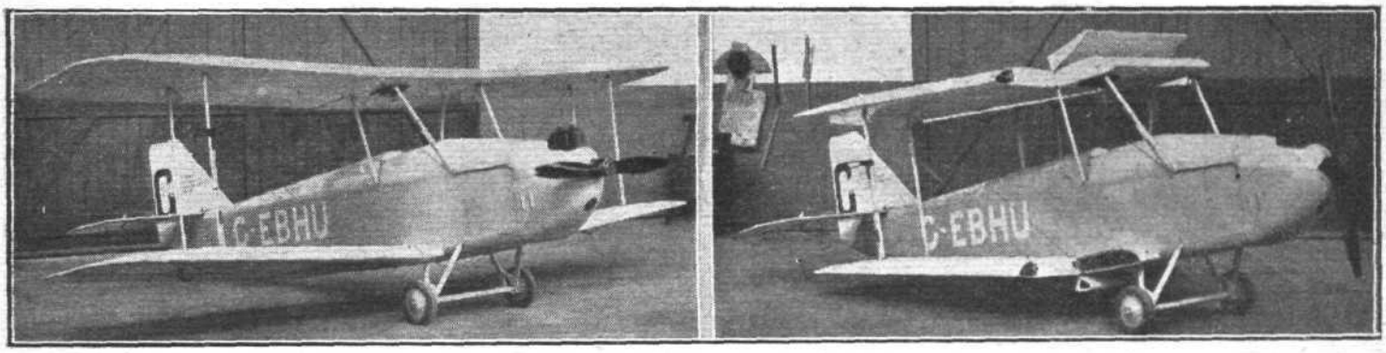
The Gloucestershire "Gannet": Side view.

The pilot's cockpit is immediately under the top centre section, and access to it is facilitated by folding up the trailing edge, which is pulled down and locked in position once the pilot is on board. The controls are of usual type.

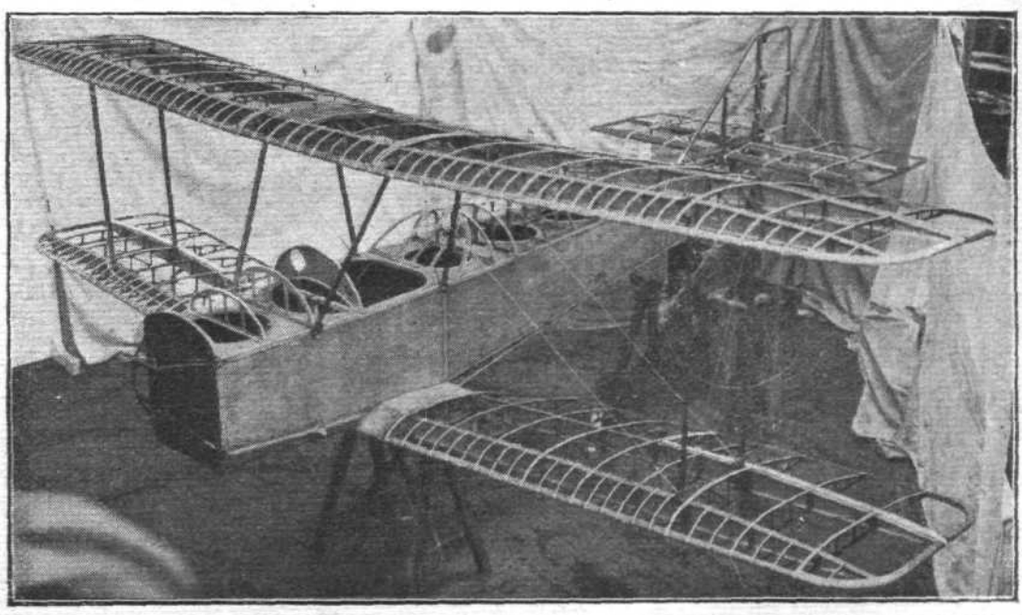
The engine, as already stated, is a two-cylinder, vertical, two-stroke, air-cooled engine of 750 c.c. capacity, specially designed. It is mounted on an engine plate carried on tubular struts, bolted to a fireproof bulkhead. As the engine is not run at extremely high revs., direct drive is employed, and it will be seen from the photographs that the nose of the machine is extremely neat, and should offer a minimum of resistance. For smoothness of running the two-cylinder two-stroke should be very good, as it is equivalent to a four-cylinder four-stroke, and it may be presumed that the cooling will be quite sufficient, as a good draught of air is constantly being blown across the cylinders when the engine is running. The petrol tank is mounted in the top centre section, and there is thus a very good head of petrol, so that direct gravity feed can easily be employed.

The undercarriage is of usual V-type, and has spruce struts carrying rubber shock-absorbers for the axle. The wheels are Palmer wheels.

The following are the main characteristics of the Gloucestershire "Gannet" light 'plane: Length, o.a., 16 ft. 8 ins.; height, 5 ft. 9 ins.; span, 18 ft. open and 6 ft. 6 ins. folded; chord, 3 ft. 1½ ins.; wing area, 103 sq. ft.; weight empty, 283 lbs.; weight loaded, 460 lbs.; wing loading, 4·46 lbs. per sq. ft.



THE GLOUCESTERSHIRE "GANNET": Three-quarter front views of the machine, with wings extended and folded.



The Gloucestershire "Gannet": View from above of the machine in skeleton.

NO. 1 SCHOOL, HALTON

The Technical Training School for Aircraft Apprentices (R.A.F.)

AT the invitation of the Air Ministry a large number of representatives of various educational authorities visited the No. 1 R.A.F. Technical Training School for Aircraft Apprentices at Halton on Tuesday of last week, on which occasion FLIGHT was also privileged to inspect this wonderful training centre.

When one looks back to the time when boys who were apprenticed to various trades experienced, to put it mildly, a by no means ideal existence—and incidentally developed more often than not into citizens of a very low standard of utility—the impression gained from our visit to Halton is that the lot of the modern British boy can indeed be a very happy and fortunate one. But even apart from this comparison, from what we saw on the occasion of our visit, supplemented by a vast amount of literature explaining the system, organisation, etc., we are made aware of the fact that here is an educational "institution" which is, we feel sure, second to none, all the world over.

A great deal has been heard about the R.A.F. Technical Training Schools, but how many people are aware that they do something more than just merely train boys to be mechanics suitable for the requirements of the Air Force? As a matter of fact, not only are the apprentices—boy mechanics, they used to be called—instructed in the various skilled works necessary in the training of an efficient aircraftsman, but in addition they receive a general education, which includes mathematics, experimental science, and English. Thus, the Air Force not only gets eventually an intelligent, efficient aircraftsman, but at the end of the latter's term of service in the R.A.F. the country obtains a healthy, educated citizen capable of immediately following a skilled trade.

We are afraid it would be almost a hopeless task to attempt to describe in detail the system, the organisation, etc., employed for instructing the aircraft apprentices, and the many subjects included in this training. It will only be possible to just briefly outline the general scheme, and point out the outstanding features and advantages.

The Royal Air Force inaugurated the system of training aircraft apprentices at its own technical schools in 1919, and the first course, which numbered about 250 as compared with the present requirements of 950, finished early this year. These apprentices are now working chiefly as leading aircraftsmen, with the squadrons and stations of the Royal Air Force. The second entry, which commenced six months later, has already completed its training, and the apprentices are about to be assigned to units as skilled craftsmen. There are nearly 3,000 apprentices under training at present in the different schools.

One of the main reasons which caused the Royal Air Force to establish these schools, which are located at Cranwell, Lincolnshire, Halton, Buckinghamshire and Flowerdown, Winchester, was the fact, which is perhaps not appreciated, that three of the main classes required—aero engine-fitters, carpenter-riggers and skilled wireless operators—are types of skilled craftsmen who do not exist in any large numbers among the civil population. In other words, the development of aircraft has led to the creation of new types of skilled mechanics. The Air Force has, therefore, to rely largely upon a regular flow of boys, which it must train itself, to supply the regular and, at the present time, the expanding needs of the Service.

The various educational authorities of the country assist by nominating boys of a suitable class for entry to the R.A.F. Training Schools, a system presenting many advantages, both to the boy and to the local education authority. For the boy, the entry examination is brought almost to the door of his home, the papers being supplied by the Air Ministry to the particular educational authority, and the scripts returned after the examination to the Air Ministry for correction, etc. So far as the local educational authorities are concerned, this arrangement enables headmasters of various schools to recommend boys for a useful career which provides the boys, at no expense to their parents, with a sound technical training and a continuance of their general education for several years beyond the ordinary school age.

It may be mentioned here that the boys, on obtaining entry to the school, besides receiving free outfit, lodging, and rations during their three years' apprenticeship, also receive pay of 1*s.* 6*d.* a day up to 18 years of age (boys "join up" at about 15 or 16 years of age) and 3*s.* a day afterwards; at 18 years of age they are allowed to smoke—out of camp! At the end of their three years' training a certain number of the boys are nominated by the officer commanding for consideration by the Air Council with a view to selection for award of cadetships, and those selected are transferred to the Cadet College, Cranwell.

Aircraft apprentices are allocated to trades on joining, after medical examination and attestation. Preference by choice is given in order of merit in the entrance examination.

Trades are taught with due regard to ordinary engineering practice, and to the special requirements of the Royal Air Force. The aim is to consider both the interests of the aircraft apprentice, *i.e.*, that he should be able to earn a good living at his trade when he returns to civil life, and the interests of the R.A.F., which is to secure 10 years efficient service from the age of 18 with a mechanic who is also an embryo engineer. To ensure this a strong groundwork of preliminary workshop practice, apart from aircraft, is provided for in the early stages. Selection in the first place is usually limited to the following trades: Fitters, carpenters, turners, coppersmiths, trained at Halton and Cranwell, and wireless operator mechanics, electricians and instrument makers, trained at Flowerdown, Winchester.

Standardised tool kits are issued individually to each aircraft apprentice according to trade, and responsibility for custody and upkeep rests with him throughout his course.

Voluntary evening workshops are arranged for, and arrangements are made by which aircraft apprentices may purchase suitable material, sets of castings, etc., to enable them to do private work in these periods. They are allowed to use their service tool kits, and instructors are told off to help them. We saw some examples of work done in this way, and were very favourably impressed with the quality and finish.

Boys are admitted twice a year, in January and September, for a three years' period of training. The training course occupies some 35 hours per week, 18 of which are devoted to the workshop, 9 hours to physical training, including organised games, and 8 hours to instruction in school—at present these 8 hours are thus allocated: 2 hours to mathematics, 2 hours to science, 2 hours to English subjects, and 2 hours to drawing.

Towards the end of the three years course every aircraft apprentice undergoes a course of instruction at the aerodrome, the object being to ensure that on posting to a service unit each individual will be capable of applying his shop and school training to the practical requirements of his particular trade.

Recreational training is not by any means overlooked, and is just as thoroughly dealt with as are the previously-mentioned sections. A trophy, presented by Mrs. Barrington-Kennett, is competed for by flights and squadrons of each section, and awarded twice yearly to the champion section. The following games count points towards the trophy: Cricket, golf, athletics, shooting, and Higgins shield standard athletes, during the summer; and in the winter Association football, Rugby, hockey, cross-country running, boxing, shooting and golf. All these sports are so arranged that there are competitive games going on the whole year round, and also aircraft apprentices are not at any time competing individually but counting points for their section in order to promote team spirit and *esprit de corps*.

Instruction in the technical shops and school is carried out from Monday to Friday except on Wednesday afternoon, which is devoted to organised games. Saturday morning is occupied in medical inspection, kit inspection, and a drill parade. Saturday afternoon is observed as a half-holiday.

On Sunday morning all aircraft apprentices attend Divine Service according to their respective religious denominations, after which they are free for the remainder of the day. They are allowed to visit adjacent villages on Wednesdays after organised games and on Saturday and Sunday afternoons, but have to be in barracks for Roll Call by 9 p.m.

The daily routine of an aircraft apprentice in barracks is as follows:—

	a.m.		p.m.
Reveille	6.10	Dinner	12.15
Breakfast	6.45	Parade for workshops and school ..	1.05
Parade for workshops	7.30	Cease workshops ..	4.45
Parade for school (for those not for workshops)	7.50	Tea	5.00
		Supper	7.30
Colour hoisting parade and morning prayers	8.05	Roll Call	8.45
		Prayers	9.20
Physical training for Workshop party ..	10.15-10.35	Lights out	9.30
Cease workshops ..	12.00		

All aircraft apprentices are allowed six weeks' holiday per year—namely, three in August, two weeks at Christmas and

one week at Easter. They select their own Messing Committee who work under the Section Messing Officer for the compilation of the weekly diet sheet.

We are afraid we have left unrecorded many other items of interest—there is enough to tell about this wonderful training establishment that would fill several pages of FLIGHT, but we trust we have given a general idea of the scheme as a

In conclusion, we wish to record our appreciation of the thorough and comfortable manner in which we were conducted round the school by Air Commodore F. R. Scarlett, C.B., D.S.O., and his staff.

THE ROYAL AIR FORCE

London Gazette, September 25, 1923

General Duties Branch

The follg. are granted short service commissions in ranks stated, with effect from, and with seniority of, date indicated :—

For seven years on the active list.—*Flying Officers.*—G. N. Carroll (Lieut., R.N., retd.), R. A. St. J. Leeds (Lieut., R.N., retd.), W. E. P. Saunders (Lieut., Indian Army, retd.) ; Sept. 15. R. Mundy-Cox (Lieut., R.N., retd. ; Sept. 16.

For five years on the active list.—*Flying Offrs.*—W. N. L. Cope, C. B. Wilson; Sept. 18. *Pilot Offrs. on Probation.*—C. G. M. Anderson, E. L. Batson-James, C. H. W. Boldero, J. S. Branch, D. C. Burnley, F. W. D. Bushby, E. C. Dearth, G. D. Gibson, R. P. Keely, R. D. Lawson, L. C. Lewis, K. Maconochie, D. J. F. McMillan, C. D. S. I. McDeivitte, C. H. P. Morgan, C. N. A. B. Mumby, T. de L. Neill, R. F. de R. Read, L. H. Ross, H. C. M. Shaw, L. R. Shaw, R. E. Slacke, G. J. Southam, G. C. I. Strachan, S. M. Thomas, J. B. Townend, F. W. C. G. Tussaud, J. H. Woodin, J. A. P. A. Yearsley ; Sept. 15.

Group Capt. R. Gordon, C.B., C.M.G., D.S.O., is restored to full pay from half-pay ; Sept. 25. *Flying Offr.* T. A. Higgs relinquishes his short service commn. on account of ill-health ; Sept. 14. *Flying Offr.* J. C. Burney-Cumming is transferred to the Reserve, Class C ; Sept. 25.

Stores Branch.

Flight Lieut. W. R. Westcombe is granted permanent commn. for Accountant duties ; Sept. 25.

Medical Branch

L. P. McCullagh, M.B., is granted short service commn. as Flying Officer, with effect from and with seny. of ; Sept. 7. A. W. Comber is granted temporary commn. as Flight-Lieut., with effect from and with seny. of ; Sept. 13.

Princess Mary's Royal Air Force Nursing Service

Miss E. Rutledge resigns her appt. as Staff Nurse ; Sept. 22.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified :—

General Duties Branch

Group Captain R. Gordon, C.B., C.M.G., D.S.O., to R.A.F. Depot ; 25.9.23, whilst attending Senior Officers' course at R.N. College, Greenwich.

Wing Commanders : S. Grant-Dalton, D.S.O., A.F.C., to R.A.F. Depot ; 21.9.23, pending embarkation to Japan as Air Attaché. C. E. H. Rathborne, D.S.O., to Marine and Armament Experimental Estab., Isle of Grain ; 10.9.23, to command with effect from 24.9.23. B. E. Smythies, D.F.C., to No. 3 Group H.Q., Spittlegate ; 12.10.23, for Tech. Staff duties.

Squadron Leaders : A. B. Langridge to H.Q. Coastal Area ; 24.9.23. I. T. Lloyd to R.A.F. Cadet College, Cranwell ; 1.10.23. R. Collishaw, D.S.O., O.B.E., D.S.C., D.F.C., to No. 41 Sq., Northolt ; 1.10.23., to command.

Flight Lieuts : H. A. J. Wilson, O.B.E., to No. 6 Armoured Car Co., Iraq : 23.6.23, instead of to No. 3 Armoured Car Co., as previously notified. E. W. Simpson to H.Q., Cranwell ; 25.9.23. L. G. le B. Croke and C. G. Wigglesworth, A.F.C., both to No. 5 Flying Training Sch., Shotwick ; 15.9.23, for course of instruction. W. F. Anderson, D.S.O., D.F.C., to No. 39 Sq., Spittlegate ; 1.10.23. J. S. Browne, A.F.C., to No. 1 Flying Training Sch., Netheravon ; 1.10.23. J. G. S. Candy, D.F.C., to No. 1 Sch. of Techn. Training (Boys), Halton ; 1.10.23. D. L. Ingpen to H.Q., Coastal Area ; 2.11.23. F. Fowler, D.S.C., A.F.C., to School of Tech. Training (Men), Manston ; 1.10.23 M. G. McL. Cahill-Bryne to Inland Area Aircraft Depot, Henlow ; 1.10.23. P. M. McSwiny to R.A.F. Depot ; 1.10.23, on transfer to Home Estab. P. M. McSwiny to Air Ministry ; 1.11.23. A. R. Jones to Electrical and Wireless Sch. Flowerdown ; 1.9.23, for long course of instruction. E. L. Howard-Williams, M.C., C. H. Awcock, O.B.E., and C. E. W. Lockyer, all to R.A.F. Depot ; 1.10.23, whilst attending long course of instruction in Eng. at Cambridge University. F. Fernihough, M.C., to Aircraft Depot, Egypt ; 10.9.23. C. B. Dick-Cleland to R.A.F. Depot ; 1.10.23, pending disposal on transfer to Home Estab. D. R. W. Thompson to R.A.F. Depot ; 1.10.23, whilst attending long course of instruction in W/T at Cambridge University. H. K. Thorold, D.S.C., D.F.C., A.F.C., to R.A.F. Depot ; 1.10.23, pending disposal on transfer to Home Estab. J. P. Coleman, A.F.C., to No. 56 Sq., Biggin Hill ; 25.8.23, on return of Detached Flight to Home Estab. W. R. Curtis to Marine and Armament Experimental Estab., Isle of Grain ; 1.10.23.

Flying Officers : D. S. Cairnes to No. 5 Flying Training Sch., Shotwick ; 15.9.23, for course of instruction. G. N. Carroll, R. A. St. J. Leeds and W. E. P. Saunders, all to No. 5 Flying Training Sch., Shotwick ; 15.9.23, on appointment to Short Service Comms., for course of instruction. R. Mundy-Cox to No. 5 Flying Training Sch., Shotwick ; 16.9.23, on appointment to Short Service Commn., for course of instruction. E. S. Borthwick-Clark to No. 111 Sqd., Leysdown ; 1.10.23. S. F. Cole to R.A.F. Depot ; 1.10.23, for Tech. duties, with Central Trade Test Board. H. J. Saker to R.A.F. Depot ; 1.10.23, whilst attending long course of instruction in W/T at Cambridge University. H. A. Haines, D.F.C., and H. P. G. Leigh, both to R.A.F. Depot ; 1.10.23, whilst attending long course of instruction in Eng. at Cambridge University. A. M. West to No. 1 Sqdn., Iraq ; 26.8.23. H. M. Moody, M.C., to No. 28 Sqdn., India ; 30.8.23. R. Pyne to No. 31 Sqdn., India ; 3.9.23. A. G. Lawe to No. 28 Sqdn., India ; 13.10.23. V. S. Parker, C. L. Cox, J. L. Wingate, and R. T. Shepherd, all to No. 56 Sqdn., Biggin Hill ; 25.8.23, on transfer of Detached Flight to Home Estab. G. J. Davies to remain at Sch. of Tech. Training (Men) Manston, instead of to Central Flying Sch. as previously notified. H. G. Brookman to R.A.F. Depot (Non-effect. Pool) ; 1.10.23. C. E. C. Penny to No. 41 Sqdn., Northolt ; 1.10.23. F. C. Farrington, M.C., to No. 4 Sqdn, S. Farnborough ; 1.10.23. W. W. Whitehead to M.T. Repair Depot, Shrewsbury ; 10.10.23.

Pilot Officers : A. H. D. Livock to No. 5 Flying Training Sch., Shotwick, for course of instruction ; 15.9.23. C. G. M. Anderson, C. H. W. Boldero, J. S. Branch, D. C. Burnley, F. W. D. Bushby, E. C. Dearth, G. D. Gibson, E. L. Batson-James, R. P. Keely, R. D. Lawson, L. C. Lewis, K. Maconochie, D. J. F. McMillan, C. D. S. I. McDeivitte, C. H. P. Morgan, C. N. A. B. Mumby, T. de L. Neill, R. F. de R. Read, L. H. Ross, H. C. M. Shaw, L. R. Shaw, R. E. Slacke, G. J. Southam, G. C. I. Strachan, S. M. Thomas, J. B. Townend, F. W. C. G. Tussaud, J. H. Woodin, and J. A. P. A. Yearsley, all posted to No. 5 Flying Training Sch., Shotwick ; 15.9.23, on appointment to Short Service Comms., on probation, for course of instruction. L. V. H. G. Clarke to No. 4 Flying Training Sch., Egypt ; 24.9.23, on appointment to a Short Service Commn, on probation for course of instruction.

MESSRS. S. INSTONE, LTD., AND AVIATION

SPEAKING, as Chairman, at the Annual General Meeting last week, Sir Samuel Instone during his remarks referred to the connection of the Company with matters aeronautical. He said that he thought it would interest the shareholders to know—perhaps for the first time—how they, a coal exporting and shipowning firm, became associated with the air, and how the company became the first trading concern in the world to employ aeroplanes in its ordinary business. At the conclusion of the Armistice there was a week or 10 days' delay in the post and telegrams to the Continent. They had a fleet of steamers, both their own and time-chartered, which were costing a very large amount per day, and it was quite customary for these boats to arrive at North French ports a week or 10 days before they could discharge, owing to the fact that the bills of lading had not arrived.

They conceived the idea of purchasing an aeroplane and getting Government permission to carry their own letters, which, to cut a long story short, was granted, with the result that after their boats had loaded coal, the documents were sent over by aeroplane, and the ships were consequently in a position to proceed to their berths and discharge their cargoes immediately on arrival—perhaps a week to 10 days ahead of other vessels forced to lie off ports awaiting the arrival of their documents. This was the means of saving for the company thousands of pounds in ship-hire and demurrage. Out of that the Instone Air Line, Limited, arose as a separate entity.

Referring to the proposed National Company, Sir Samuel said they had no doubt seen a great deal in the Press concerning the future of civil aviation. The company they controlled was making good progress under exceptionally difficult conditions, but as the Government had decided that the present subsidy arrangements should come to a close in March of next year, and that a national company, to be the sole subsidised line, should be formed, introducing new capital and to absorb present operating companies, negotiations were proceeding on these lines.

The Instone Air Line, Ltd., were invited to make proposals for the formation of a national company, which they had done, and same were now being considered by the Government ; but they felt very strongly—with the great record and good will this company had established and enjoyed for safety—it should not be forced to link up with, and be under the control of, enterprises—some quite untried, and others whose history was bound up with accidents, loss of life, and damage. He did not think it necessary to go further into the matter at that stage, or even deny publicly several of the very damaging and untrue statements made respecting their attitude towards other companies by interested parties.

In regard to a few facts connected with the Instone Air Line a few interesting points available are that during the period January 1 to August 18, 1923, on the London-Cologne service, 196,000 miles were covered (equal to about eight times round the equator) ; there was one landing only not on an aerodrome ; seven abandoned journeys, but no accidents. During the same period no claim has been made on the insurance companies, whilst all the original D.H.34's are still in use, G-EBBR and G-EASI each having over 1,000 hours to their credit and about 830 journeys. The London-Brussels-Cologne special daily goods machine carries 2,600 lbs. freight, and at that rate has enough goods in hand to last for six months full load. All of which is encouraging for the future of commercial aviation.

By DOUGLAS B. ARMSTRONG

Turkish Air Stamps

THE latest addition to the ranks of countries issuing special stamps for aerial postage is Turkey, who is reported to have introduced a series of five air post stamps of triangular design in connection with the recent extension of the Trans-European air mail service to Constantinople. Examples of these stamps themselves have not yet come to hand.

Casablanca-Dakar Covers

MR. ALAN TURTON, who specialises in air postage, has shown us one of the souvenir envelopes sold by the Aero Club of Morocco on the occasion of the experimental air post flight on May 3 to 5 last. These envelopes have a brilliant red border with a space for the 75 centimes air stamp in the top right-hand corner, and the device of an aeroplane propeller at the bottom to the left, and were further impressed in red with a rectangular handstamp inscribed "AERO-CLUB DU MAROC—Inauguration de la ligne aérienne—CASABLANCA—DAKAR—Lignes aériennes—LATÉCOÈRE." In all 250 letters were carried by the three 'planes that took part in the flight.

A RETURN journey was made by two 'planes only on May 11, 22, 1923, one of which carried a mail bag containing about 650 letters and postcards. All were franked with ordinary 25 centimes postage stamps of Senegal, and were impressed with the circular cachet of the Mairie of Dakar, containing a seated figure of the Republic in the centre.

"Alcock" Air Mail

APROPOS of the remarks on "flown-covers" which appeared in this column on September 20, a correspondent writes that not all genuine Alcock-Brown Trans-Atlantic air mail letters bear the London receiving mark of June 17, 1919, as the paragraph suggests, but that a still more certain test for actually flown letters bearing the "Alcock" stamp is that they should show the postmark of Harbour Grace, Newfoundland, for June 14, 1919, which was struck upon all letters put on board the Vickers-Vimy machine on the day of the actual flight.

French Guyanaise Air Line

A SET of air post stamps seldom met with by British aero-philatelists is that issued under authority of the French Colonial government by the Compagnie des Transports Aériens Guyanais, by whom a regular bi-weekly service was maintained between Cayenne, Inini, and St. Laurent, from July, 1921, until November, 1922.

The stamps issued by the company to denote the supplementary air post fee of 75 centimes were locally printed and of an exceedingly primitive character. The first type, struck by means of a wooden handstamp, is apparently intended to represent an aeroplane in flight, above the initials T.A.G. Both red and violet impressions exist. The next issue was a trifle more ambitious, being set-up from printers' type in oblong format with the winged device of the firm in the centre, "T.A.G." above and value in figures beneath. In September, 1921, a new stamp was brought into use in the design of a large upright rectangle with a crude Mercury head in the centre, and inscribed "TRANSPORTS AERIEN GUYANAIS—O·75." Another type current about the same period had the device of a winged shield bearing figures of value in the centre and similar inscriptions, but in oblong format.

As from October, 1921, the use of these semi-official air post stamps ceased, and all charges were prepaid in the regular postage stamps of the Colony down to November, 1922, when the service, which had been irregular for some time, was finally suspended.

Readers are invited to forward to the Editor of FLIGHT *letters, etc., bearing aerial stamps or postmarks for mention in this column, as well as out-of-the-way varieties, etc.*

We shall also be pleased to hear from correspondents interested in air-stamp collecting, and to answer any queries.

CORRESPONDENCE

[The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.]

SAFETY IN FLYING

[2069] It is generally recognised that about 90 per cent. of serious flying accidents are due to the loss of minimum flying speed, and consequent stalling and diving. This sometimes applies to the pilot of considerable experience, but more often to the beginner. It raises the question as to what means there are of guarding against loss of speed. We can leave out of the question the matter of improved design, both of machine and controls, and also reduction of landing speed, because whatever improvements there are in sight the danger attending loss of minimum flying speed—even if minimised—will still be present.

If the pilot makes use of the A.S.I. loss of flying speed is practically impossible. It has been the custom, however, to train pupils not to rely on the A.S.I., but to trust entirely to the feel of controls. It seems highly probable that this attitude is a legacy from the early days when A.S.I.'s were comparatively unreliable, and it may have led to a convention which bans the use of the instrument during training, and therefore for the rest of the pupil's career. I suggest that it may be very desirable to train pupils from the first to use the A.S.I., but it is not suggested that they should not also be trained to fly by feel of controls. This might be done during dual instruction by covering up the A.S.I. on alternate days.

A pupil should be imbued with the fact that loss of minimum flying speed is fatal, and this should be brought to his attention during training by every possible means.

It may be suggested that the A.S.I. may fail at the critical moment—it *may*, once in a thousand times—or it may be suggested that there is too much "lag" in the instrument, but this is certainly not of serious amount during the ordinary manœuvres of making a forced landing.

The one golden rule of "*Keep above minimum speed whatever happens*" is often not sufficiently realised. We are not yet in sight of the "safe" machine that always does the right thing whatever the pilot may do. I suggest that the number of serious accidents might be greatly reduced by a more intuitive use of the A.S.I. G. DE HAVILLAND

PUBLICATION RECEIVED

Gear Tooth Grinding. The Gear Grinding Co., Ltd., Handsworth, Birmingham.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: cyl. = cylinder; I.C. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1922

Published October 4, 1923

6,567. J. V. MARTIN. Retractable alighting-gear. (176,386.)
12,494. ENGLISH ELECTRIC CO., LTD., and W. O. MANNING. Floats. (203,366.)
16,280. A. BEHM. Method of ascertaining altitude of aircraft. (181,389.)

APPLIED FOR IN 1923

Published October 4, 1923

11,324. SOC. ANON. DES ATELIERS D'AVIATION L. BREGUET. Spark-synchronising device for engaging engines with a common propeller. (196,928.)
20,946. J. V. MARTIN. Collapsible and retractable pontoons for aircraft. (203,646.)

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